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NOTES ON THE EYE.

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THE appearance of several articles on the surgery of the eye in the last issue of the VETERINARY JOURNAL have suggested the following remarks :—

1stly. *Extirpation of the Eyeball.* In the event of Mr. Freeman again having to perform this operation, I would advise him in the first place to seize the eyeball, and fix it, with a tenaculum, separate the eyelids by the aid of a retractor, and detach the eyeball from its surroundings by cutting through the conjunctival folds and the oblique muscles; then make an incision of about an inch long in the skin over the temporal fossa, pass the index finger through it, and dissect the pad of fat, until the reflection of the peri-orbitale (the ocular sheath) is reached; and after dividing it by the aid of a scalpel, pass the chain of a small ecraseur through the incisions so made (using if necessary a piece of twine or loop of wire as a guide) and round the straight muscles of the eye, the optic nerve, and the arteries, and draw it cautiously home, when he will sever the vessels without any trouble, and will not have much hæmorrhage to contend with. A wire ecraseur can be more easily passed over the eyeball than can the chain, but is less likely to arrest hæmorrhage.

2ndly. In reference to operating for entropium—while I do not pretend to express any decided opinion on the merits or demerits of the operation described by Max Kettritz, seeing that I have not preformed it, I, nevertheless, think that the advantages to be gained by it over the longitudinal excision are not, if at all, very material. In slight or recent cases, three methods of dealing with this deformity without incision have been practised by myself

—(*a*) the use of the horn disc, as already described in the JOURNAL; (*b*) the gathering up of a longitudinal fold of skin—as in the ordinary operation for entropium—and retaining it in position for ten days or a fortnight, by the aid of an over-and-over, or side-to-side, continuous suture; (*c*) the passing of a piece of aseptic silk or twine through the eyelid, at the distance of about a quarter of an inch from the margin, and securing it to the skin of the forehead by passing it through a fold thereof, and tying it to the free end of the palpebral suture, and leaving it in position for six, eight, or twelve days; two or three such sutures may be required, according to the size of the eyelid.

3rdly. In cases of Pannus of the Cornea, I see no reason why the application of an infusion of jequirity seeds should not serve the same purpose as that which was gained by the zymotic infection practised by Mr. James. The former can always be obtained, and is easy of application.

4thly. I would direct attention to the value of chloride of zinc in the treatment of purulent ophthalmia and the corneal ulceration so frequently resulting therefrom.

INOCULATION IN PLEURO-PNEUMONIA.

BY C. CUNNINGHAM, M.R.C.V.S., SLATEFORD.

Remarks (continued from vol. xxiii., page 240).—Take a cow's tail, clip off a little hair from the tip, insert a little really good lymph in a proper way under the skin, and in a very short time that cow will be proof against Contagious Pleuro-pneumonia. "Strange doctrine; whence learned?" some may even yet say. "Strange if true,"—and true if strange.

Four names, in our view, stand out prominently in connection with inoculation—Dr. Willens or Willems, of Belgium, who, we are told, first successfully practised it; Professor Gamgee, its warm advocate at one time, but who did not persevere with it; Mr. Graham-Mitchell, for himself and as the representative of many in Australia and New Zealand, who, twenty years or so ago, adopted it with a fair measure of success, and often with very gratifying results; and fourthly, Mr. Rutherford, of Edinburgh, who, some ten years since, introduced the process into Scotland, and has brought it to its present standard of excellence, labouring indefatigably among the most difficult class of subjects with great and uniform success.

Inoculation in these several hands varies. Dr. Willens is said to have considered "the blood and the serous and frothy liquid squeezed from the lung in the first stage the most suitable matter for inoculation." Professor Gamgee, it is rumoured, had an un-

fortunate preference for the root of the tail as the proper part for the operation. In Australia and New Zealand, in 1860-70, promiscuous inoculation appears to have been extensively practised by skilled hands and unskilled alike, and in all manner of ways. Given a good lung and good lymph, and a careful operator, very good inoculation, and very fair results appear to have been often obtained. The cattle, though turned to pasture in most instances to take their chance immediately after being operated on, appear in the warm and genial climate, and in a semi-wild state, to have gone through the ordeal well, the actual loss being in such cases reported to be about 2 per cent. Given, on the other hand, a bad or indifferent lung and lymph, and a careless or clumsy operator, little, if any, true inoculation, but not infrequently blood-poisoning, seems to have followed. The promiscuous mode of operating, and the systematic neglect of after-treatment, explains much of the diversity of opinion regarding inoculation in the Colonies.

Very different has been the method followed by Mr. Rutherford in the Edinburgh dairies and elsewhere. The greatest possible care is taken to obtain only really good and reliable inoculating virus, not the "serous and frothy liquid" of Dr. Willens and others; everything of a questionable nature is at once rigorously rejected. The diseased animals are slaughtered, only the apparently unaffected operated on, and after-treatment is considered of the greatest importance. For long the work was only that of Mr. Rutherford himself, on one definite system and plan, drawing forth all his care and skill; hence its undoubtedly great and unvarying success.

Into such matters, however, it is not our province to enter. Valuable information as to Continental and Colonial inoculation is given in many of our veterinary periodicals, especially from 1870 to 1880; in text-books on medicine and surgery; and in the published transactions of the Highland and Agricultural Society of Scotland are two essays, one by Armitage (1876) (not very favourable to inoculation), and another (1882) by Rutherford (advocating it in the warmest terms), which go very fully into the matter. In such works all necessary and desired details are freely entered on, and may be referred to.

Our object in a few closing remarks is simply to consider, in the light of the ten outbreaks we have reported, certain views and objections which have been raised and brought forward very recently against inoculation, when properly performed, as a preventive to the progress and spread of Contagious Pleuro-pneumonia. These objections may be summed thus :—

I. Inoculation is not the "infallible preventitive" its advocates depone.

II. "Inoculated animals contaminate healthy animals."

III. After inoculation, "certain animals remain which have Pleuro-pneumonia in a limited area of the lung," and these animals "may propagate and spread the disease."

IV. Therefore, as the safest, most economical, and best way in the end, "Stamp out Pleuro-pneumonia"—kill and slaughter every one and all of the animals on the premises, whenever and wherever the disease appears.

Let us drop theorizing, and come to actual facts and practice. Let us quietly take these views and objections, and bring them alongside of our ten outbreaks, and see how matters stand.

A. A very severe, well-established outbreak—the fourth of its kind in the same premises within the previous eight years. The presence of disease hid for a time. One cow convalescent, another dead; 17 diseased animals slaughtered in a corresponding number of days; outbreak ended; upwards of 40 inoculated cows saved; premises cleared two months afterwards.—No Pleuro-pneumonia there for the ensuing eight years.

B. Also a severe, fairly-developed outbreak—the last of about a dozen or so visitations during two "nineteen years' leases." Seven cows killed diseased; 28 inoculated saved; disease checked at once and permanently.—No recurrence for six years.

I. If inoculation was not an "infallible preventive" in these two instances, what was it?

II. If "inoculated contaminate healthy animals"—How comes it, when the premises were cleared so soon, and some of the inoculated cows from time to time sold off, that fresh non-inoculated animals were bought in, tied up in the same stalls, under the same roof, breathing the same air for days and weeks and months; fed, milked, and waited on by the same attendants, alongside of and surrounded by their short-tailed inoculated companions—How comes it that not a single case of contamination appeared?

III. If not an animal with "Pleuro in a limited area" was left, then great and valuable must be the diagnosing power of the thermometer and the process of inoculation. But if a single cow really remained with a patch of diseased lung in her chest, why did she not there and then breath out germs "during her lifetime," and spread and propagate disease?

IV. "Stamp out Pleuro-pneumonia"! Call in the butchers. By the dozen in the day down with the seventy remaining animals. Erect shambles on the premises. Make the gutters run with blood. Dig two 12 feet cubic pits for the offal. Seize and sell the carcases. Hand the £400 Compensation Bill to the Local Authority for the ratepayers' delectation. And having done all this—Have you done better than "Inoculation and the Act" on the farms of A and B? Have you done as well?

C, D. Two outbreaks in the same premises—an interval of twelve months between. First case slaughtered in each instance a lately-bought-in cow, showing little outwardly, but after death found with a big consolidated lung. Four cows victims to the disease, two to the operation; 44 inoculated saved. Cost in compensation to the Local Authority of this county, about £35 for C and £7 for D.

E, F, G, H, I, J. Seven outbreaks in six different dairy premises—a recurrence in E. In several the disease in its most violent insidious and aggressive form, taking three, four, and half-a-dozen victims at a time. In round numbers, 150 animals in contact, thirty-five killed diseased, a few fat healthy slaughtered; 110 inoculated cows saved. Compensation money paid by Local Authority to owners for the suppression of these seven outbreaks of Pleuro-pneumonia a little under £350.

I. Each and all of the outbreaks were put an end to, and the diseased animals disposed of, within one month of the official declaration of disease. Only one recurrence, and in it six inoculated animals stood scathless, beside seven thorough bad cases of Contagious Pleuro-pneumonia, in its incubatory, developing, and fully-developed and advanced stages.

II. It may be said that in recurrence E, the six inoculated animals contaminated the fifteen newly-bought-in animals. The fact should not, however, be overlooked that the first attacked of the fifteen were brought in only two months after the appearance of the first outbreak, and were always in close proximity to the premises H and J, when the disease existed there in full force and operation. In newly-cleared premises, with Pleuro-pneumonia to right and left of them, it is not surprising that in the end these animals became affected—the surprise is that it did not develop sooner. Had the six inoculated neighbours been the cause, the effects, so far as we can judge, would have been earlier experienced.

In F, on the other hand, inoculated cows have been gradually and regularly sold off, and fresh animals *not* inoculated put in, till at the present time, twenty-nine non-inoculated cows are standing healthy and well and mixed up beside and along with fourteen of the remaining animals that we inoculated in the spring. Last week, too, in G, we saw two big fine healthy non-inoculated cows standing in the very centre of the straw-thatched house, with eighteen of our inoculated cows tied up on either side of them, and beside too, and next to a cow which we suspected of being a mild recovered case of the disease, but which we took the precaution to operate on. In "I", also may be seen two "short-tailed" cows, standing beside six "long-tails," and touching a cow

much reduced from the effects of Mammitis, and peculiarly susceptible, one would suppose, to the contagious and contaminating principle, if any were present. But such appears destroyed. Explain it as one may, inoculation really appears to produce such a change in its subjects, and even on the premises in which they stand, that a recurrence, or propagation of the disease very rarely indeed occurs. A very great improvement, laying everything else aside, on the old non-inoculating times. The combined evidence of these ten outbreaks, and of our experience, goes dead against the statement that "inoculated animals contaminate those that are healthy."

III. After inoculation, it is objected, "animals remain with circumscribed Pleuro, which may propagate disease," and which, in the opinion of the Chief Adviser of the Privy Council, should be "put under lock and chain." Ten, twenty, thirty years ago, when inoculation was not thought of here, it was known, and has always been known, that during an attack of Pleuro, a few animals not suspected, and the few recovering convalescent cases, almost always on being slaughtered, were found more or less affected. On the 6th of last month (October), a client of mine bought at a public sale in Edinburgh a cow, brought her home and placed her in a cow-house, amongst fourteen others. On the 15th on being called, we isolated the cow, in a few days had her slaughtered, finding a case of partial recovery from Pleuro. On the 8th and 10th of the present month, we found two of the owner's own cows affected and had them slaughtered, inoculating twenty-two others, putting an end at once to the disease.

Here in a nutshell, as we all know, is the chief cause of the continuance and reappearance of the disease, and of our way of dealing with it. A long-tailed, non-inoculated, apparently healthy animal from affected quarters, without a mark on her to tell her history and character, finds her way to sale, market, and dealer's hands. She is sold seemingly all right. Soon in her the seeds of Pleuro develop, and after her, in a few weeks, her neighbours. Sadly these long-tailed, non-inoculated, hypocritical animals need "official lock and chain." We respectfully commend them to the notice of the advisers of the Privy Council. Keep such animals from being bought or sold, and inoculate them, and, in our humble opinion, Pleuro-pneumonia will rapidly decrease and disappear.

A "Manx cat," a docked inoculated cow, is a marked animal. She need deceive no one. Her history and character are plain. Of the 140 we have by ourselves operated on, scarcely a score boast of an intact tail. With very few exceptions they are docked to six, eight, ten inches from tip, and three or four are literally "Manx cats." Those not docked, we now advise the owners to cut the

hair short, and expose the inoculatory mark. Let the cow be known for, and seen to be, what she really is. She will, in ninety-nine cases out of a hundred, go straight to sale and slaughter-house, and thus satisfy every one.

IV. Take all the 150 remaining healthy animals from C to J on the first appearance of the disease. Call out the city "floats." Two at a time "float" them along the turnpike road and public streets to the slaughter-house. Empty the men's premises. Shut them up for three or four months. Put an end to their business for the time being. Lay the cold, clammy hand of "stamping out" on them and their premises. Crush them down. Crush out the disease. Slaughter. Sell. Take the salvage. Give three-fourths or full compensation. Instead of £400, hand over the £1,000 or £1,500 Compensation Bill, and ask the owners and the rate-payers if this is a just and reasonable, and scientific proceeding, and in accordance with their wishes and views? Lately we stamped out eleven outbreaks of Swine Fever, killing some 400 pigs, cleaning and disinfecting, and keeping empty for months, and when fresh pigs were put in again, back came the disease in two instances, and the dismal "stamping out" had to be gone over once more. Would "stamping-out" of itself rid the country of Contagious Pleuro-pneumonia? Would there be no recurrence?

Summing up: during the last thirty years or so we have seen Pleuro-pneumonia Contagiosa treated without the Act, under the Act, with the Act combined with Inoculation; and, lastly, we have had some little experience in "stamping out," and we give our decided preference to the Act and Inoculation. 1. We have found Inoculation a certain preventive in these outbreaks; after the third or fourth week we have had no trouble. 2. We do not believe that after a reasonable interval, say three or four months, that "inoculated animals from affected places will contaminate healthy animals." 3. "Pleuro-pneumonia in a limited area of the lung" is frequently met with in cattle that are not inoculated, and such animals we look on as the most common and frequent source and cause of the disease. In a herd of cattle, on the other hand, that have been *properly inoculated*, we are of opinion that cases of "circumscribed Pleuro" are rarely left, and after a time, if existing, *they are harmless.* 4. "Stamping out Pleuro-pneumonia" we look on in the meantime as unnecessary, uncalled for, expensive, cruel, harsh to owners, and not likely to be effectual.

Let but the Privy Council, Local Authorities, veterinary inspectors, veterinary surgeons generally, the police force, and owners of stock throughout the country unite heartily in the good work of *discovering, disclosing, and removing the cause* of the disease. The

Act and inoculation will speedily remove its effects, without the painful and costly expedient of "stamping out." But so long as the cause is allowed to exist, neither one nor all of the measures mooted will thoroughly eradicate the pest.

A little improvement might, however, we think, be made on the operation of the Act, coupled with inoculation—thus:

Put the restrictions on an owner's affected premises. Pick out at the very earliest opportunity all the diseased animals, and proceed to slaughter them. A good supply of right lymph is at such times always available. Allow the owner the price of the carcases, and instruct him with it and his own means to buy in as many animals as will make good his losses, and inoculate the newly-bought cows at once. Keep his premises shut for three months at least after. The diseased animals are thus slaughtered; inoculation will stay the further progress of the disorder; the owner has a full stock to go on with, protected and safe from further inroads of Pleuro; he has got the salvage of the slaughtered animals in his pocket: and having got this, we really think he needs very little further compensation. About one-half, if not a fourth, of that usually accorded should suffice. An advantage to and saving of the public rates, giving the owner the great benefit of a full stock with which to carry on his business and serve his customers—a benefit which he prizes much more highly than full compensation with a diminished stock and a lessened milk supply.

As regards inoculation as applied to breeding stock, we cannot speak from practical experience, but we believe that for the breeder, as for the dairyman and feeder, it will ultimately (as it has already to a great extent) be proved amply sufficient; and in the application of the Act we would suggest the same freedom to make up vacancies and losses, provided the animals are at once inoculated. Keeping the restrictions on the breeder's premises much longer, say six or nine months, and if at the end of that time all has been healthy and well—cows calving and young stock showing no signs of Pleuro—we would free that breeder's premises, firmly believing that his stock would do no harm either at home or abroad.

In closing, we have simply to apologise for encroaching on so very much space, and appearing so often in the JOURNAL during the past year. "Torsion of the Uterus," "Tumours in Shoulder," and "Inoculation in Pleuro-pneumonia," however, are subjects which need all the little candles that can be brought to bear on them. We trust the cases and remarks may do no harm—that the ventilation of the subjects may do good.

PARASITES IN NORMAL BLOOD.

BY RICHARD W. BURKE, V.S., A.V.D., STATION VETERINARY HOSPITAL, CAWNPORE.

LEIDY, in 1858, in Philadelphia, described the Filaria immitis identical with the Filaria papillosa hæmatica described by Delafond and Gruby (*Recueil de Méd. Vet.*, 1843, 1844, 1851). The full-grown filaria, according to Krabbe (*Repertor*, 1871), reaches a length of 15 to 30 cm., and a thickness of one mm. Oreste (*Gaz. Medic. Vet.*, 1874) found twenty-five examples in the right ventricle of the heart, which seemed to cause embolism and thrombosis described by Serres (*Journal du Midi*, 1854). In the left side of the heart, at the closure of the auriculo-ventricular valve, described by De Silvestri (*Il Medic. Vet.*, 1871).

The embryos of the Filaria immitis are found by the thousands in the blood of the dog, according to Delafond and Gruby. In section, the embryos are $\frac{1}{4}$ mm. long, and five micromillimeters thick. Lewis found filaria in Indian dogs, buried in the walls of the aorta (*The Pathological Significance of Nematode Hæmatozoa*, 1874).

These are usually classed as filaria, and they don't seem to excite any disease when in moderate numbers. In other cases, apoplexy may result from embolism of the heart and closure of the valves; and also the embryos appear to cause apoplexy by blocking up the capillaries of the brain. Besides this they may cause epileptiform convulsions and anæmia and wasting; also hæmorrhages into the lungs and skin, and varied symptoms.

Investigation seems useless until the life-history of the filaria is established. Transference of the filaria seems possible by simple contact, but this is so far somewhat doubtful. The embryos of these worms seem to be as easily derivable from outside the body as by contact. Some interesting papers may be consulted on this subject by Rivolta (*Giornale di Pisa*, 1877), Lange (*Deutsche Zeitschr. fur Thiermedicin u. Vergl. Pathologie*, 1882), and others. The remarkable tendency of the blood to harbour parasites has been a matter of not recent observation. Their characteristic features manifest a disposition to augment in numbers, under any shock or depression of the system. Sometimes, prolonged exposure to malarious and ill-sanitary influence, debilitating effects from impaired nutrition, from hyperpyrexia, etc., issues in a morbid alteration of the blood peculiarly fitted for the growth and multiplication of these organisms; but, even when no change in the surroundings of the animal is discoverable, a deep impression is often stamped upon the system, leading to their increase.

UTERINE FIBRO-MYOMA IN A TWO-YEAR-OLD FILLY.

BY J. HARRISON, M.R.C.V.S., BURTERGILL, WARCOP.

THIS very common abnormality in the human subject is, at least in my practice, among the lower animals a very rare one. I am not aware I have any record of a case similar to the one I am about to relate amongst the veterinary literature I am possessed of. Possibly, other members of our profession may be quite well instructed in the life-history and treatment of such growths: to such I would say, excuse ignorance. The difficulty I felt in being able to diagnose this case (which is the first I have ever seen) at my first and second visits, leads me to think that there may be younger members than I in the profession in much the same predicament if called upon to treat similar cases, and this is the only apology I have to offer in submitting it for publication in the VETERINARY JOURNAL.

The subject of this communication is a two-year-old filly belonging to Mr. Dalton, of Bank End, near Appleby. I received a message on the 30th of October to the effect that the filly was running out in the fields, looked quite lively, but they had observed she was passing very red urine, which stained her buttocks very much. Thinking it would be a case of ordinary Hæmaturia, brought on, probably, as a result of Indigestion, I sent a drench made up of Ol. Lini. Oj., Ol. Terb. ʒij., with instructions to let me know if it did not relieve her. On the night of the 3rd November I received a message that she was still passing red urine, and beginning to strain herself, and she had not passed any dung during the day. The night being a very wet and stormy one, I made up a ball of Aloes B. B. ʒiv. Hyd. Sub. Chlor. ʒi., and sent with instructions to administer immediately, and also to apply a mustard blister over her loins, as I thought probably there might be some calculi in one of her kidneys, or some other abnormal change in their structure. On the morning of the 4th I received a message that the filly was getting worse, still passing bloody urine, and no action in her bowels, and I was requested to go and see her. When I got there (which was at a distance of about five miles from my place) I found her standing in her stall, and presenting the following symptoms:—Head expression lively; pulse soft, not much quickened; temperature, 98·3 proximately; respirations quickened, but did not time them; no fæces passed; some amount of œdema external to the rectum; considerable amount of periodic straining, but difficult to decide whether it was due to tenesmus of the bowels or uterine contraction; colicky symptoms, indicated by pawing with her near fore foot on the floor of her

stall; appetite diminished; a fœtid smell from her urino-genital organs. Made an exploration per rectum as high up as her kidneys; found no extra heat or enlargement there, but on pressing down over the region of her bladder, I found some distention, but nothing that I considered alarming or to call for the use of a catheter—in fact, what I thought was the supra-pelvic surface of that organ felt like the segment of a cricket ball, but soft. Being quite at sea as to the cause of the red water, I had no alternative but to treat the symptoms. Gave Tr. Opii. ℥ij., Nit. Eth. ℥ij., Plumbi. acet. ʒi., in half a gill of aqua com., to be repeated in the morning. I also ordered more mustard to be applied over her loins, and made up a camphorated carbolic acid liniment, with two to twelve of Tr. opium added, a portion to be injected up the vagina as far as it could be driven with three-ounce syringe, every three or four hours. This was done with the intention of reducing the fœtor and allaying any irritation that might exist about the neck of her bladder. Visited my patient again on the 5th. Found her stretched out in a recumbent position, lying on her off side, frequently raising her head in the direction of her near flank, was told she had been much in this position since my last visit, and the straining had become so much more severe, that a fleshy enlargement frequently showed at the mouth of her vagina, and that she had not passed either urine or fæces. Her pulse was much about the same, her head expression lively, skin temperature uniform and warm, but her bowels were a little tympanitic. Made another exploration per rectum and vagina as high up as the cervix, but could discover nothing new that would aid me in fathoming the cause. Concluded that the protrusion must have been the florulent cervix, which receded when the straining ceased, to its natural position. Still having no other alternative but to treat the symptoms, I threw up an injection, which only brought away a very small quantity of hardened fæces thickly coated with mucus. I administered a drench made up with Ol. Lini. Oijs., Tr. Opii. ʒij.; ordered a strong mustard blister to be well rubbed over her abdomen, and well up on her off side, and also injections of warm soap-and-water to be thrown up every two hours, till her bowels responded to the physic. The swelling about her anus, which was increasing rapidly, I made up a linimentum arnica lotion for, and ordered the swollen parts to be bathed with it frequently. The stench from the vagina being fearful, I had a piece of tow wrapped round a slender stick, and with this dipped frequently in the anodyne carbolic liniment, to be inserted up to the neck of her uterus, and I gave my employer to understand that the filly, though not quite, as the saying is, at death's door, he might not be surprised if the case terminated badly. On the morning of

the 7th I received a message that her bowels were beginning to act, that the rectal swelling had subsided, but that, in straining through the night so violently, she had forced something out of her vagina, which was blocking up the urinary passage completely. I at once had my trap yoked up, and drove down to see what new phase of the business we had now arrived at. On my arrival I found the filly eating a mash, looking lively, but with this large protuberance hanging partly out. On examination I found it had no relation to the structure of any part of the uterus. By pulling it down, and rather aside, I was enabled with my hand to explore the uterine passage up to the os, where I found it was a fibroid tumour, attached by two pedicles to some internal part of the uterus, but as, in addition to the substance of these two pedicles, I could only get about two fingers through the os, the question arose in my mind as to what to do with it. I had no instrument with me suitable to detach it at its source, and the whole thing being in a state of putrid decomposition, I determined to break its connection at the os uteri, and trust to nature to kick out the remainder of the pedicles; this I did by a screwing thumb-nail process. The tumour would proximately be about two pounds weight. I made two or three sections of it, and found it to be of a tough fibrous character, thoroughly intersected with blood-vessels, which were all empty; colour, dark purple. The stench that clung to my hand and arm was such that no amount of soap and water would remove it, and it was only by having a wash after I got home, in a strong solution of permanganate of potash, that I could rid myself of it; I left eight half-ounce doses of Bromide of potash, one to be given twice a day. I saw my employer's son the day following this, and he told me the filly was very much relieved, her appetite being good, and the excretions from her bowels and bladder were becoming natural, but she still strained herself a little, which I expected the uterine contractions to continue till nature had relieved her of this, to me, curious myomatic growth entirely.

November 20th, I again saw my employer's son, and ascertained from him that two or three days after the operation the remains of the pedicles began to show at the vagina, the contractions continued, and the last time he saw anything of it, it was hanging out about six inches, about the thickness of a man's wrist, and paler in colour than the tumour; she had cleared herself of it in the nighttime, and it was lost among her bedding. He further told me that with the exception that he thought she urinated rather too frequently, she was in perfect health, very playful when led out to water, and that he intended to break her in for work next spring.

On making further inquiries as to her past history, he told

me she did not do very well last winter, being thin in condition, and being in a narrow loose box; every time she turned around, she showed symptoms like what is seen when a mare is coming in season; but in the summer after being turned out to grass she made flesh fast, and they saw nothing amiss till a day or two before he consulted me. In making a resume of the case, I have little to say but what is of a speculative character. As the saying is, "All's well that ends well." But it is possible that had I been quick enough in penetrative diagnostic powers at my first visit to this patient, I should have forced my hand, which is rather a small one, into the uterus, and very probably with a wire-roped ecraseur, or some other instrument, have severed the pedicles or peduncles of this malicious growth, even at the risk of incontrollable hæmorrhage. After seeing what Nature with a little assistance can do in the way of clearing out Uterine Fibro-Myomata, I should suggest the advisability of not being too quick in undertaking any instrumental operation for their removal. That the tumour was the sole cause of the red urine spoken about there can be no question, and it would no doubt be due to interlumbar pressure on the kidneys, or an escape of blood from the uterus at the act of micturition, possibly both. It may be suggested, too, that the violent uterine contractions squeezed all vitality out of the tumour, and as it were starved it to death, and after this, decomposition setting in, facilitated in the case of its removal; possibly the vaginal anodyne carbolic injections would, instead of doing what I intended them to do, be the means of relaxing the neck of the uterus, and thus favour the means of its expulsion. As to the probable cause of these uterine growths I can offer no opinion of my own, and therefore leave the disquisition of the subject to more able pathologists, and with this remark I conclude—probably some other member of the profession will give his experience on the subject.

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(*Continued from page* 258, *vol. xxiii.*)

But to return to the different kinds of bony deposits. Some of the specimens I have consist of masses of matter analogous to common chalk; others are as hard as adamant. This explains, I think, the reason why some splints are so readily absorbed. Cold applications will, not infrequently, cause rapid absorption of these deposits; on the other hand, we know also that the most potent agents will often fail to reduce them. I have had occasion to

penetrate the bony deposit with a sharp knife, or the actual cautery, both of which have failed to effect the desired end when the mass has been of the stony kind. If we can ascertain in our examinations to what class the abnormal deposit belongs, it will guide us in a great measure in our opinion, and we shall be likely to gain some credit for our discernment. That renowned writer Mr. Percivall, in his "Hippopathology" has not made mention of the *quality* of the deposit in his remarks upon Ringbone: he merely describes its situation, size, and form. Too much stress cannot be made as to the *quality* of the growth. I am convinced, however, that situation has much, indeed almost everything, to do with its influence in causing lameness. If the exostosis commences immediately underneath a ligament or tendon, the pain will of necessity be much greater than when isolated. The tension produced upon the periosteum is bad enough, which, if added to by the interference of ligament or tendon, will, of course, cause an augmentation of the pain, and consequent lameness. The causes of Ringbone are said to be threefold—hereditary, structural, and incidental. If we could ascertain the soundness or otherwise of the parents of our patients, it would lessen the difficulties sometimes met with. I knew a horse with Ringbone who was used as a sire. It was stated when he was introduced into the locality that the enlargement upon the limb was *not* Ringbone, but, as he was racing, it was contended he met with an accident, and that the swelling was produced by it, which ought to be a guarantee of its innocuousness. The animal was excessively lame, which was readily accounted for from the fact of the abnormal growth of bony matter—occupying so much space as to implicate the ligaments and tendons passing over the pastern joint. He was in the possession of a very popular man, which was sufficient to gain a good introduction for him. Some of his produce have come under my notice, and have been pronounced anything but sound ones. Lameness has been a characteristic feature in some, although it was difficult to state positively that Ringbone was the cause. At the same time, the rigid state of parts in connection with the coronary ligament favoured the idea that the cause of lameness was in the immediate vicinity, as there was an absence of any symptom by which I could fix upon any other part as the source of evil. The reply given by a horsedealer in Percivall's "Hippopathology," when asked how it happened that but few Ringbones were now met with compared to the number that attracted notice in times past, deserves to be known:—"Because no breeder of horses nowadays will send a mare to a horse having Ringbones." This seems to direct one's attention more especially to a hereditary predisposition on the part of an animal to contaminate his produce

with disease which exists in his own system. A great deal is often said by persons in courts of law as to hereditary predisposition. Some are of opinion, a disease—Ringbone, for example—is one of this class; whilst others contend it is sometimes, but not always. Who can settle such a question? Surely, it may be argued, one man's opinion is as good as another's when neither has the power of proving his case by ocular or other conclusive demonstration. It is still an open question as to whether many complaints are not hereditary. Would it be too much to say that *all* diseases which are not really produced by *accidental* or other *well-definable causes* are hereditary? I am much inclined to this opinion. It is no proof of the *in*-correctness of the theory, merely because every animal whose sire or dam was known to possess this or that infirmity does not at once become affected in a like manner. The exciting cause which most complaints wait for may not have had its influence. My idea of diseases generally is, that the system, prior to its becoming affected by any particular one, must be by some influence rendered or brought into a state to receive the taint. This will apply more directly to those diseases which are generally known as contagious and infectious; but it also applies to most, if not all, others. We may turn to one of our old authors, and find the following truism with reference to Ringbone: "It proceedeth, as some fanciers hold opinion, either from some blow of any horse, or striking the horse's foot against some stub or stone, or such-like accident; but surely I hold that also it proceedeth from some imperfection in nature; forasmuch as I have seen many foals foaled with Ringbones on their feet. These Ringbones do breed a viscous and slimy humour, which resorting to the bones that are of their own nature, cold and dry, waxeth hard, and cleaveth to some bone, and so in process of time becometh a bone." (*Vide* Markham's "Masterpiece," page 225.) Every practitioner's experience will doubtless afford the same evidence as regards the young animal being seen to suffer from these deposits, soon after they see the light. With respect to treatment, it may not in this paper be out of place if a few words are written in reference thereto. Most veterinary surgeons pursue a similar mode by which these abnormal growths are attempted to be got rid of. I say, *attempted*, because I believe but few cases of Ringbone *are indeed removed*. The author just quoted gives the practice of the ancients, that is to say, "caustic applications, both potential and actual; cutting down upon the bone with a lancet or sharp knife," etc. I should like to know how much improved that kind of treatment and practice is in the nineteenth century. For my own part, I don't see that the practice generally is much beyond what the ancients did, except the division of the nerves. In some

cases of old standing, when they have been under the treatment of others previously and failed to relieve by the *then* usual remedies, such as firing, etc., I have divided the nerves and rendered the animals serviceable for a considerable time. It may be stated that the actual cautery has been abandoned in my practice for a long time, and I would not willingly consent to return to that system, except great pressure were employed. I have long felt that I can do, and *have often restored animals to usefulness* without recourse to the actual cautery, and in numerous instances when that has failed in the hands of other practitioners. But this is no place for puffing. Ringbone under any circumstances must be considered an *unsoundness.*

(*To be continued.*)

OBSERVATIONS ON THE "GANGLION OTICUM ARNOLDI" AND "GANGLION INTERCAROTICUM."

BY MAX KETTRITZ, GNESEN, GERMANY.

ASSMANN was the first who found this ganglion in the calf, and gave a perfectly exact and precise description of it, but he did not agree with Arnold as to its ganglionic character. It is found in the calf at the origin of the third branch of the Trigeminus, where the nerve divides into the inferior maxillary, lingual, and masseteric branches. Arnold found this ganglion only surrounded by connective tissues, but intimately united with the third branch of the Trigeminus. Assmann, on the contrary, found it lying in a continuation of the dura mater, which composes the firm connection between the ganglion and the third branch of the Trigeminus, but could not, like Arnold, trace any nerve-fibres going from the ganglion to the branch mentioned above, because it is stripped off with the sheath of the fifth pair of nerves, the adhering fibres are not nerve-fibres, but filaments of fibrous connective tissue. Besides, the ganglion adheres so closely to the sheath, that it can only be separated from it by the knife. Arnold believes that the union of the Otic ganglion with the Ram. masseter takes a great part in the formation of this nerve; while Assmann is of the opinion that there is more a continuation of the sheath upon the nerve than a real formation of a nerve. A long time before Schlemm, who was first informed by Bock, Assmann stated the fact that the branch, which goes to the Musc. tensor tympani comes from the Ram. pterygoid internus. According to Arnold's theory, this branch originates in the ganglion, whereupon he based his physiological explanation of hearing. The Pterygoid. internus penetrates the ganglion, and in its centre originates the branch for the Tensor tympani, which is intimately

connected with the Pterygoid. internus. The nerve then passes below the Eustachian tube, in a cartilaginous channel of its own, to the Tensor Tympani. Assmann came to the conclusion that it was doubtful whether this ganglion was a real ganglion or not, because its structure differed greatly from the common characters of ganglia, which is proved by maceration.

Assmann did not find the Otic ganglion of the sheep in all cases, especially in old animals, but nearly always in young ones; and for this reason he does believe in the ganglionic character of this organ, because its relative size is larger in young animals than in old ones, where it has changed its absolute size. Assmann found in all cases, where he had examined sheep, that the branch of the Tensor tympani did not originate in the ganglion, but came from the Ram. pterygoid; that it did not penetrate the ganglion, but passed beneath it, and became visible as soon as the so-called ganglion of the third branch of the Trigeminus was stripped off. The Otic ganglion in the stag is very large; its anterior process goes to the Musc. buccinator, which surrounds the nerve like a sheath, but can be traced in the muscle for quite a distance. The nerve for the Tensor tympani arises also in the centre of the ganglion, is closely connected with the Pterygoid. intern. and perforates the ganglion. Assmann found in the stag, for the first time, the branch which Arnold describes as the Ram. petrosus superficial, and later on he found this nerve distinctly in the calf, horse, sheep, and pig. This nerve undoubtedly originates in the ganglion, and without penetrating the same, passes, enclosed in the sheath of the Vero. tens. tympani, into the tympanic cavity, where Assmann could not trace its final distribution. But he does not pretend to say whether this was a real nerve or not. In the horse and sheep the Otic ganglion is divided into two halves, but the origin of the branch for the Tens. tympani does not vary, as it always originates in the Pterygoid. internus. Assmann discovered in three human heads, which he examined, not the least trace of a ganglion; but he found a reddish corpuscle consisting of a mass of connective tissue, fat, and blood-vessels. Neither could he discover any of the rest of the nerves as described by Arnold; however, he saw a branch for the Tensor tympani always came from the Pterygoid intern.

From these examinations Assmann arrives at the following conclusions:

1. That Arnold's ganglion is no real ganglion, but a gland, because he found similar enlargements where branches had penetrated the skull;

2. That the nerve of the Tensor tympani does not originate in

the ganglion, but comes from the fifth pair, and therefore the theory which Arnold based upon this discovery is inadmissible, when he says that the automatic motion is due to the sympathetic nerve, because this branch is from a sensory nerve.

As to my own examinations, I found this ganglion in all animals which I have examined (calf, pig, cat, rabbit, horse, and ox). In the cat it is very small, and in the rabbit it consists of two lobes. In the calf and in the ox the connections of the ganglion could not be seen so well as Arnold described them in the ox, sheep, deer, and goat, when an anterior process joins with the Nerv. buccinator. On the contrary, I found the same as Schlemm did, that the nerve is continuous with the Nerv. buccinator, which in the calf goes to the Musc. buccinator and the buccal glands. Besides, it seems that the masseteric nerve receives some fibres. Neither did I find any connection through short fibres with the small root of the Trigeminus, nor with the trunk of the third branch, as Arnold says; but it is the buccinatory nerve which, at the exit of the third branch of the Trigeminus, immediately forms connections between the ganglion and the nerve, while at the same time many fibres of the anterior process of the ganglion join the Nerv. buccinator. These fibres are not white, but gray, and where they unite with the white fibres of the buccal nerve the gray matter disappears, with the exception of the anterior part, which also has gray matter and divides into two branches. The smaller branch goes round the Nerv. masseter, and joins the same at the anterior part of the Otic. ganglion, and here forms a connection with the fibres, which go to the buccal nerve. The larger branch goes externally round the trunk of the Ram. tert. nerv. trigemeni, in order to unite with the posterior border of the Otic ganglion, whereby a complete circle is formed around the ganglion. In some cases I saw distinctly that the nerve for the Pterygoid. externus went through an opening of the ganglion without distributing any fibres to the ganglion. I never saw the connection of the ganglion with the internal Pterygoid. nerve, and in four cases I did not find any connection of the ganglion with the third branch of the Trigeminus, with the Pterygoid internus, or with the nerves for the Levator and Tensor veli palatini. The principal nerves which come from the ganglion Arnoldi are the Nerv. ad tensorem tympani and the Nerv. petrosus superficialis (Arnoldi). The first nerve comes from the internal Pterygoid. nerve, goes through the ganglion, and is distributed in the Tensor tympani. The second nerve originates in the ganglion, goes to the external side of the Musc. tensor tympani, forms an arch over this muscle, and then unites with the tympanic branch of the glosso-pharyngeal nerve. In man there exists, according

to Arnold and Schlemm, the same grayish-red ganglionic mass as in animals, but it is on the internal side of the third branch of the Trigeminus. It is only much smaller, more oval than crescent-shaped, and in this way differs from the shape observed in animals. This ganglion does not consist of vascular connective tissue, as Bock and Schlemm assure us; but it is surrounded by cellular tissue. In the four heads of horses which I have examined it was not only present, but was very distinct, In the fifth case there was a curious disintegration of the base of cranium, near the ganglion. Arnold and Langenbeck found in their examinations, that the ganglion was adhering to that part of the third branch of of the Trigeminus which is known as the Nerv. crotaphetic-buccinatorius. In the cases mentioned above, the ganglion had a different connection with the Trigeminus to that in the calf or ox; it also communicates with the buccal nerve, but not distinctly, otherwise it is closely united with the internal Pterygoid nerve and the trunk of the third branch of the Trigeminus, just the same as it has been described by Arnold. Professor Mayer, of Bonn, mentions a quite remarkable nerve of gray matter which connects the posterior and inferior border of the ganglion with the auriculo-temporal nerve, at the point where the Arteria spinosa anterior goes across the ganglion. Arnold also saw this nerve, which is absent in the calf. There is no doubt that two small fibres pass from the posterior border of the ganglion to the Musc. tensor. tympani. Mayer assures us that both in man and the calf, the nerve for the tensor of the tympanum passes throngh the ganglion and originates from the internal Pterygoid. nerve. Prof. Bock's notion that the fibres coming from the ganglion are bloodvessels is wrong.

Ganglion intercaroticum.—As this little ganglion is not much known to anatomists, but, on the contrary, has been almost ignored, the medical profession is under obligation to Professor Mayer, of Bonn, who first called attention to this remarkable ganglion. I believe, with Neubauer, that Professor Haller was the first who discovered this ganglion, because in 1743 he already gives a distinct description of it in his dissertation: "De vera nervi intercostalis origine." Haller probably demonstrated this ganglion in February, 1742, as it is mentioned in the dissertation of Berkelmann: "De nervorum in arteris imperii:" Goettingen, 1742. Afterwards Andersch mentioned it in the second volume of his "Tract. de nervis c. h. aliquibus," described it distinctly, and was the first who called it Ganglion intercaroticum. In Haller's Physiology (1762), the ganglion has been described as being constantly present. A similar fact has been stated by Neubauer (1772), while different authors, as Murray, Iwanoff, Girardi, and Mayer never mention this ganglion, and Scarpa expresses himself

doubtfully, so that it cannot be ascertained whether he knew this ganglion or not. Sömmering pretends that the ganglion is present occasionally, but in an inconceivable manner, confounded it with the temporal ganglion. Of late, anatomists have been describing this ganglion either as not present or only occasionally present.

The intercarotic ganglion is ovoid in shape, larger above than below, of a reddish-gray colour, quite hard to the touch, and in proportion more dense than the Nervi molles, which is related to it. I never found such a transparency, as Andersch noticed in the temporal ganglion. The intercarotic ganglion is situated close to the first ganglion of the Sympatheticus. It is very difficult to dissect it from the surrounding mucous tissue, because the latter is more fibrous and adheres tightly to it. Its internal structure can be been distinctly after it has been macerated for a few days. A transverse section then shows a lot of reddish-white fibres, anastomosing with each other, and united by a dense mucous tissue. As the angle of division of the external and internal carotid is larger or smaller, the more or less is the ganglion pushed anteriorly. To demonstrate it, it is good practice to cut the carotid arteries away, and dissect the nerves from behind. Concerning the branches which go to the ganglion, Haller only mentioned those of the Ganglion cervicale supremum, which follows posteriorly the course of the carotis. Andersch saw the main branches of the pharyngeal nerve enter, and often two or three small branches of the Nervi. molles. Neubauer described the entrance of the Nervi. molles into the ganglion, and states how their branches, coming from the ganglion, form loops around the carotis. My observations prove that the case described by Neubauer is more frequent, because branches of the laryngeal branch of the Vagus unite with the Nervi. molles to form a small ganglion. Generally the branches of the glosso-pharyngeal nerve unite earlier with the Nervi. molles, before they themselves enter the ganglion. Only twice did I observe three branches of the third and fourth branch of the glosso-pharyngeal nerve going further down and entering the ganglion directly. I therefore take it to be the rule that this ganglion, which belongs to the sympathetic nerve, receives its connecting branches from the pneumo-gastric nerve.

The abundance of the anastomosing nerve, which nature has given to these parts, is really remarkable. Extending about one inch above the division of the carotis is the most abundant anastomosing plexus of the Nervi. molles, the branches of the pneumo-gastric, glosso-pharyngeal, and especially of the second cervical nerve. Often the latter forms in different places small ganglia; and frequently these branches subdivide and surround the common

carotid and facial arteries, and can easily be traced to the adventitia of these bloodvessels.

Frequently, branches emerge from both sides of the ganglion, which partly go to the arteries, partly to the Nervi. molles, forming loops; so that the ganglion is totally surrounded by plexus of nerves. From the lower part of the ganglion, from three to six branches will be found, which are distributed to the superior part of the common carotid artery. Mayer says that the ganglion is attached by a small ligament to the angle where the carotis divides, which is true, if the dense mucous tissue which surrounds the ganglion and extends to the angle of division, may be considered as a ligament. As far as the development of this ganglion is concerned, I myself could trace it distinctly in a horse-embryo only eighteen weeks old. It had an oval, nearly triangular shape, as in old animals. Mayer's comparison of the intercarotic ganglion (of the cœliac) with the ganglion of the cœliac plexus, is surely not to be denied, as there is a certain correlation of the abdomen with the neck, not only in grown animals, as also in the fœtus. The intercarotic ganglion is present in all mammalia, as well as in man. In birds this abundance of nerves around the arteries of the neck is absent, undoubtedly owing to the peculiar position of this sympathetic nerve. But this is compensated for by numerous plexuses of the sympathetic and cervical nerves, which go to the skin but never enlarge to form any ganglion, as we find in the mammalia and in man.

In conclusion, I have to acknowledge my indebtedness to my friend, Dr. Thiele, of the College of Medicine in Los Angeles, for kindly advice, and for lending me works of reference.

Editorial.

ABORTION IN CATTLE.

THE annoyance and loss caused by abortion in cattle, has for very many years caused breeders and veterinary surgeons to set their wits to work in order to discover upon what this accident or disease depends. Of late there has been special activity in this search; and what with the better means for investigation, the improved methods of research, the better training of investigators, and the determination to submit everything to experimental demonstration before arriving at a final decision, there is every likelihood that, before long, the more obscure agencies operating in the production of wide-spread outbreaks of bovine abortion will be discovered, and possibly rendered impotent. Of course, this mishap may depend upon various causes, the obvious result of accident or disease. But that form of abortion which, beginning with one pregnant cow, soon extends, like an infectious malady, to others in its vicinity, until all in a herd or shed have aborted, and the expected produce of a season is lost, has not yet been satisfactorily accounted for, and all kinds of surmises have been hazarded as to its origin. Some observant veterinary surgeons years ago came to the conclusion that the spread of abortion from one cow to another was due to infection, conveyed from that first affected, and have, consequently, insisted upon sanitary and prophylactic measures for its control. Franck and some others have strongly supported this conclusion, by resorting to experimentation, and inducing abortion in the same manner as they would any other infectious or infective disorder: that is, by introducing matter from a cow which had aborted into one (*per vaginam*) in calf. Microscopical examination of this matter has revealed the presence in it of organisms which are probably the active agents in bringing about disunion between mother and fœtus. In view of the importance of the subject from an economic and pathological point of view, these experiments and observations are being continued, and among those who have engaged in them may be noted Professor Arloing, of the Alfort Veterinary School, whose recently published report has attracted a considerable amount of attention. This report has been published in the *Recueil de Médecine Vétérinaire*, and an interesting analysis of it has appeared in the *Mark Lane Express*, from the pen of Professor Long. To this analysis we now refer; but before doing so, we would like to point out that the evidence as to ergoted grasses producing abortion is far from being complete or satisfactory; indeed, if we relied upon the results of experiments with ergot of rye on pregnant cows, this fungus has no influence whatever in inducing abortion.

M. Nocard received from the Minister of Agriculture in December last a commission to study the question of abortion, which had caused severe losses among the breed of Nivernaise cattle, and if possible to ascertain the causes of the disease, and the means by which it might be avoided. In his report, which is based on careful and extensive investigations, the

professor states that he believes that abortion is a contagious affection, resulting from the presence of microbes. He first of all analysed the work of a commission upon the subject, made at the instance of the Minister of Agriculture, and the opinions which were then furnished by numerous veterinarians are classified in three groups, as follows :—

1. The cause of abortion is believed to be precocity and a tendency to fatten, qualities which can only be acquired at the expense of rusticity and of the capacity for procreation.

2. It is believed that to crossing, and especially to crossing with a shorthorn bull, that abortion is to be attributed.

3. The smaller number of experts believe that abortion is owing to the ingestion of grasses upon which are developed fungi analogous to the ergot of rye.

The whole of these hypotheses are opposed by M. Nocard. If, says M. Gabarret, a veterinary surgeon who himself insisted, in the *Journal d'Agriculture Pratique* last year, that abortion was contagious, fattening is in effect unfavourable to gestation it can only be on account of a predisposition, and he shows that there are some races much more improved than the Nivernaise, which are not subject to the disease, nor does it ravage all those herds which are crossed with shorthorns. In some cases a bull which has been accused of disseminating abortion in one herd has been used with impunity, and without loss, in a neighbouring herd. These facts, says the writer, militate also against the hypothesis of ergotism, for abortion attacks some animals taken from pastures before the autumn sets in, and others which are fed upon hay cut before the flower is matured. In neither of these cases has ergot had time to develop. In other cases, animals graze upon pastures which have never been cut, and where ergot is freely formed, and yet they are never attacked. Finally, if the ergot of rye provokes uterine retraction after calving, there is nothing to prove that it does not do the same during gestation; and M. Nocard has never been able to provoke abortion by the experimental administration of ergot of rye to pregnant cows. In his next chapter M. Nocard deals with the symptoms and progress of the disease, repeating facts known to numbers of breeders who have been victims to the Cattle Plague. The complaint generally appears after the introduction of a pregnant cow which has been newly purchased, and, generally speaking, the animal standing next it is the second to abort; although it may happen by accident that a cow is attacked which has not been in actual contact with the new purchase. Most frequently the greatest number of abortions are in that part of the cow-house where the first aborting cow was standing. M. Nocard says that the disease is long in incubation : thus a farmer named Poerneau, taking a lease of a farm where abortion had been prevalent, brought with him 32 cows pregnant from six to eight months, none of which aborted; but in the second year eleven cows out of the herd of thirty aborted from the fourth to the eighth month of gestation, and since that time, for it is some years ago the herd has been regularly afflicted. Thus the professor lays down that it is on account of a lengthy incubation that newly purchased cows

which are due to calve, and are perfectly healthy, seldom abort when introduced into an infected stable. Near to Provins, a woman maintained her family upon the produce of four milking cows. Each time one of the animals was served, abortion followed. The cow was then fattened for the butcher, and replaced by a cow due to calve as soon as possible, in order to avoid the abortion. At last her little farm was burnt down, stables, cows, and all, and when the premises were rebuilt and stocked the disease had entirely disappeared. A veterinary surgeon named Lucet purchased a cow due to calve in two months, and which came from an infected farm. She aborted at once, and was followed by her neighbour in the stall. The two cows were sold to a butcher, and replaced by two others, which also aborted, together with five other cows which had been in the stable for some time. A tenth beast, also purchased and isolated for one month, aborted six weeks after it had been placed in the infected premises. Abortion seldom appears before four months of gestation, and the period becomes later each season, so that at the end of some years the aborting cows actually arrive at full time; although in this case their calves die of diarrhœa, the causes of their death being the same as those which give rise to abortion. The condition of the mother has not any influence upon the abortion, says M. Gabarret, who appears to have analysed the large and important work of M. Nocard. The aborting cow is not even indisposed, although the vulva is swollen. There is no difficulty in the delivery, which is sometimes practically artificial. Calves born of aborting cows, and which seem likely to live, die of diarrhœa four times out of five, from the first to the third day after birth. They do not suck, and bellow in a particularly disagreeable manner.

Abortion, says M. Nocard in his third chapter, has all the characters of a contagious disease. What are the organic injuries which provoke the premature expulsion of the fœtus? Three hypotheses present themselves:—

1. Is it a disease of the pregnant cow?
2. Is it a local affection of the genital organs of the mother?
3. Is it a disease of the fœtus, or of the envelopes which envelop it?

The first hypothesis must be discarded. The condition of the cow is not affected. She preserves her health; her urine, her blood her milk, remain normal, and a *post-mortem* examination discovers no injury whatever. The second hypothesis deserves more attention, and in dealing with it M. Nocard inscribes upon the head of his programme:—

1st. The *post-mortem* examination of cows soon about to abort.

2nd. The *post-mortem* examination of cows upon the point of aborting.

3rd. The *post-mortem* examination of cows having aborted the previous year and not being since impregnated.

The following are some of the results of these experiments. A Nivernaise cow aged 2½ years gave premature birth to a fine calf of about 5 months. Her health was good, but she was killed the same day at Nevers. Some of her blood, milk, and urine were saved, and the viscera

was found normal. An incision in the uterus discovered some flakes of yellow muco-purulent matter. Cotyledons adhered to the placenta; around some pedicles was a yellowish pus-like matter similar to that which drains from the vagina after abortion. By pressure a few purulent drops also drained from the cotyledon, and by scraping the part a milky-like juice was seen. A small quantity of the milk, the blood, and the cotyledon pulp, as well as of the pus-like matter, was sown in some "bouillon" of fowl and veal, and in some tubes of peptogelatine, probably after the system of M. Pasteur. The pus-like juice and the uterine mucus were also examined by means of a microscope. The pus-like matter presented a large number of micrococci, together with some bacilli; in the cotyledon juice were bacilli almost to the exclusion of the micrococci, while the juice obtained by scraping gave both organisms in about equal quantities. After forty-eight hours, the "bouillon" sown with cotyledon juice had cultivated, almost in a state of purity, the bacilli above mentioned. That which had received the pus produced both organisms, while the blood and the milk showed no organisms at all, and the uterine mucus presented no especial alterations. A cow numbered "7" presented the same results as the cow mentioned above. No. 8 cow, which had aborted many months and which had refused to take the male, was killed for the butcher. Her viscera and uterus were normal, a liquid obtained by scraping the mucous membrane of the uterus was slightly acid and *swarmed with microbes*. The uterus of aborting cows always contains micro-organisms, whereas, that of a healthy beast does not contain any, nor is the uterine liquid acid. In all the cases of experiments and post-mortems, the greatest precaution was taken to avoid the introduction of foreign organisms or germs, M. Nocard draws the following conclusions :—

1. In aborting cows there exists, between the mucous membrane of the uterus and fœtal envelopes, micro-organisms, which are not found in pregnant cows which have previously borne calves, and coming from a district where abortion is unknown.

2. These micro-organisms do not appear to exercise an injurious action upon the mucous membrane of the cow during gestation or after abortion.

3. Abortion repeated in the same animal is explained if the influence of the microbe is admitted, by its persistence in the uterine cavity until the moment when it can exercise this action upon a new fœtus or upon its envelopes.

4. Consecutive sterility is also explained by the acid reaction of the uterine liquid, in which the microbes perpetuate themselves, the spermatozoa not being able to preserve their vitality in acid media.

Lastly, the third hypothesis, "Does abortion result from disease of a fœtus or its envelopes?" To answer this question M. Nocard made two series of *post-mortem* examinations. In the first series he dealt with aborted calves born "likely to live," and in the second with those "not likely to live." In the first series the blood, bile, serum of the blood, spleen, kidneys, liver, and lympathics gave negative results, neither organ presenting any trace of micro-organisms. In the second series the same

results were obtained with regard to the blood, bile, urine, serum, liver, etc. The digestive organs, not having been used, and not having, consequently, received any micro-organisms from the exterior, yet contained numerous microbes of various species, either in the intestinal liquid or in the mucous membrane. This discovery is of considerable importance, for the digestive canal of a normal fœtus which has never breathed nor drunk does not show any trace of microbes at all. Their presence, then, may be considered as an incontestable sign of the epizootic nature of abortion, and it also explains the diarrhœa which causes the death of calves, and the rapid putrefaction of the fœtus. Most breeders have noticed the strange and continued bellowing which aborted calves make before they die; and M. Roux, chief of M. Pasteur's laboratory, believes that he will be able to prove an analogy between this symptom and the cry of a dog affected with Rabies; but to prove this it will be necessary to search for the initial cause of the microbe. In two other experiments upon twelve and eight calves respectively, the positive results obtained were further substantiated.

LYMPHANGITIS.*

BY RICHARD W. BURKE, A.V.D., SENIOR VETERINARY SURGEON, STATION CHIEF VETERINARY HOSPITAL, CAWNPORE.

THIS disease deserves particular attention, as it is, in the horse, often mistaken for the "worm disease" (Farcy). It is very frequent in horses, and also in other domestic animals, and is seldom primary. It occurs after mechanical irritations, mostly follows other diseases, as after inflammation of other parts from which the lymph has its origin; or it is a result of lymph circulation taking in impurities from other parts of the body. It occurs in the limbs when there is pus in the foot; in the side walls of the breast through saddle-pressure, etc. In "worm disease" (Farcy) it may appear in any part of the body, when the glands also become affected.

Pathological Anatomy.—Inflammation of the lymph-vessels shows ecchymoses, induration, and thickening, and, in the early stage, is easily lacerated, afterwards becoming tough. The inner membrane is of a dull appearance, ulcerated; the lumen of the vessel is enlarged, and has lymph cells and molecular particles and pus. The neighbouring connective tissue is also inflamed, not unfrequently showing hæmorrhagic streaks, serous or purulent infiltrations, and, here and there, along the lymph-vessels, the cells are swollen and knotty. In other places, abscesses form in the swollen spots. The lymph glands are usually inflamed and much swollen.

Appearances.—The upper parts of the lymph-vessels are at first painful, and in the early stage broad, then corded like a string. Frequently swollen knots exist, which extend sometimes to the interior of the lymph glands, which are surrounded by a painful, œdematous swelling of connective tissue; is accompanied by severe fever, which may last for some time. The termination is different in different cases. If the inflammation is cut short, the swelling becomes smaller by degrees, and the lymph-vessels return to their normal character. Frequently blockages occur in the lymph-vessels, and new connecting vessels form themselves, on which one or more painful, hard swellings appear, which persist for life, and which is seen in the hind legs of the horse,

* Translated from Röll, *Lehrbuch der Pathologie und Therapie der Hausthiere*, 1885.

chiefly. Frequently the termination is purulent degeneration, by which many abscesses form in the course of the lymph-vessels, which, when cured, leave small marks behind, or when becoming confluent, burrow through the skin, etc., and unite with adjacent abscesses. In a healthy animal, if the abscesses are opened, they usually heal early. Blood-poisoning, as a result of inflammation of lymph-vessels, is not frequent.

The course varies according to cause, sometimes leading to a cachexia. When the inflammation has been cut short, the disease does not usually last long. If many vessels are inflamed, it may be weeks before it is cured. Where the cause is not infection, the prognosis is not bad.

Treatment.—As long as it is in the inflammatory stage, quicksilver ointment, or washing with Goulard's water-fomentations. Where abscesses have been opened, touch with caustics, as sulphate of copper, etc., or iodoform with carbolic lotion, or iodoform in glycerine. Internally, arsenic in the form of Fowler's solution.

In cattle it is known as the "worm." It appears on the legs, rarely on the neck, in the form of thick fingers, remaining hard, sometimes attaining to a very large size without destroying the skin, and when opened gives out a thick, paste-like, white substance. It is chronic. Treatment seldom gives any good results.

A MYSTERIOUS DISEASE AMONG HORSES IN NEW SOUTH WALES.

A PECULIAR nervous malady has manifested itself among horses in New South Wales, the nature of which the Government Veterinary Surgeon was commissioned to investigate. The following is his report on what is designated "Australian Stringhalt:"—

"The peculiar ailment to which I give this name is new to me. Although a veterinarian for twenty-five years in Great Britain and in India, I have never seen such extraordinary abnormal symptoms, as are manifest in this disease, until investigating an outbreak of it in this colony.

"There is no record of its existence in other countries.

"A disease must have a name, and the name, however inappropriate to the pathology, will, nevertheless, be accepted by the public, if it leads them to recognise the disease when they see it.

"Hence the word 'Stringhalt' is retained, as being well understood by horsemen to mean a spasmodic affection of one or both hind legs, which is occasionally met with all over the world. At the same time, it is rarely so severe as to incapacitate an animal from work. Its pathology is not well understood, but it differs in many important features from the disease under consideration; so that it will be well to dismiss from the mind any idea of these two diseases being identical, or, indeed, of bearing any relation to each other. Therefore the words Australian Stringhalt are used, being distinctive and leading, as they will convey to the reader the geographical locality of the affection, and its most prominent symptoms.

"From information I have been able to gain from various sources, it is a disease long known to have existed in the colony of Victoria, and has, from time to time, been under inquiry by the Victorian authorities and veterinarians; and I cannot understand why Mr. Curr, the Chief Inspector of Stock for Victoria, should have been so reticent of the information thus obtained, when, at my suggestion, the Chief Inspector of Stock for New South Wales asked for the result of their inquiries, at the time when a serious outbreak of this disease induced the department to enter on the investigation.

"It is both interesting and important to know that this disease can be

clearly traced to direct introduction from the sister colony, and it only occupies very limited areas in the counties of Cumberland and Camden; it has also been seen at Orange and on the Victorian borders.

"History of this Disease in New South Wales.

"The first case brought under notice was at Richmond, in a brood mare, sent from Dandenong, in Victoria, five or six years ago; she came for stud purposes, and was noticed to be badly affected with Stringhalt in both hind legs. At the time this attracted little attention, but the following year many brood mares occupying the paddock she had been in were seen to be affected with Stringhalt, all within a few weeks of each other. These mares were of different ages and breeds, and came from various districts. Inquiry was diligently made in the neighbourhood, but nothing of the sort could be found outside this one paddock; and, strange to say, this paddock has retained its reputation for producing this disease, outbreaks having occurred in it from time to time; but no fresh case has been seen there for the last two years, for this reason, that cattle and ponies have occupied the paddock instead of mares. In May, of this year, I visited Moss Vale in consequence of serious losses being reported from this disease. I found that a very few cases only had been seen in 1885, and it was never seen in that locality previous to that year, when a stud mare had been sent to the breeding station first named, and returned with Stringhalt. The following year, almost an epidemic of this singular affection suddenly appeared amongst the breeding mares, colts, and fillies, in the paddock she had occupied. The disease this season was widespread throughout the district, and many horses of all descriptions were found to be more or less affected; and being so general, it was impossible to trace the source of contamination. It was certain, however, that nothing of the kind had previously been seen.

I visited a third centre of the disease at Camden, and found the history of this outbreak agreed, so far as the year of invasion was concerned, but the actual method of its introduction could not be defined; two sources were open, one being by purchased animals from an infected place brought on to the station, although showing no symptom of the disease at the time; the second probable source being a river-frontage, so shallow from drought that trespassing horses may have introduced the disease.

It is most satisfactory to find, from a circular letter sent to all inspectors of stock in New South Wales, that the disease is unknown beyond the places already named in this report. The disease is only seen in the horse species; I believe it to be communicated indirectly from one horse to another, and, therefore, it is contagious.

It is certain that one animal may contaminate a paddock, so that others will have the disease; and it may spread by water, dust-storms, and food, as well as by other means.

Nature.

It is a local, nervous affection, characterised by an involuntary spasmodic action of the muscles of both hind legs, continuing for several weeks or months; then most frequently recovery slowly takes place; in others the disease becomes chronic, and in some instances degeneration and paralysis are the results.

Death occurs from animals being unable to extricate themselves from difficult situations, or being unable to get about after food and water.

Causes.

Hitherto the cause has been enveloped in considerable obscurity, and I find that Veterinary-Surgeon Kendall, in his book on "Diseases of Australian

Horses," describes the disease as so common to Australian horses that some breeders attribute it to a certain herb, prevalent in certain localities; others to a species of dandelion. Kendall evidently considers it to be rheumatic in origin, and not dietetic, and that a sudden chill may be sufficiently exciting cause to develop it.

The Richmond outbreak was attributed to a metallic poison known as venadium, which was found on analysis to exist in the clay taken from the waterhole supplying the affected paddock, the water being very low at the time, and the fact of the disease being only in this paddock, and recurring year after year in it, strengthened the assumption.

With the kind assistance of Messrs Watt and Hamlet, the Government Analysts, I obtained information on the poisonous action of this mineral, the Tribasic sodium vanadate being used for experiments by Professor Gamgee, and it was found to act upon the central system of the spinal cord and medulla oblongata, especially affecting the respiratory nerve centres. This action does not agree with the symptoms exhibited in this disease, which is excited action in the periphery of nerves. However, to satisfy myself, I visited the North Shore (Sydney) brick-yards, which are working identically the same formation of clay as that found at Richmond, and which extends over a very large geographical area. From these yards, lightly burnt bricks, richly tinted by the yellowish-green oxide of venadium, are to be seen in many of the surrounding buildings; I also made inquiries of horse-owners and shoeing-smiths as to the prevalence or otherwise of the disease, and failed to get information of a single case of Australian Stringhalt having ever been across the harbour, although horses are drinking the water from these clay-holes continually. Further, at Moss Vale, I found a similar clay formation; also the venadium efflorescence on burnt bricks in several places, which were free from disease. This metal exists probably in very minute quantities, and has undoubtedly been present in these clays for all time; but no case of poisoning has occurred, and this particular disease was quite new in the localities, never having been seen to attract attention until the recent outbreak.

At Camden, where the disease was very severe, and in one paddock only, the water supply was from a running stream, and no venadium could be detected, so that the venadium theory is untenable.

The Victorians say a dandelion causes it. The weed suspected is not a dandelion; it is the Hypochœris radicata, the common names being cat's ear, or flatweed. It was introduced from Great Britain, is hardy, spreads rapidly, and smothers other herbage. It is wholesome and nutritious. Horses and ruminants eat it freely, and for weeks together have had little else to live on, and apparently did well on it. That Hypochœris radicata has no connection with Australian Stringhalt is proved by great numbers of horses eating it, and never having the disease. The disease is known to exist in localities free from this weed. The weed has no medicinal or poisonous properties. It is very prevalent in many parts of the colony which are free from this disease. After deliberate inquiry and a close investigation of many cases, post-mortems, and microscopic examinations, with a very careful analysis of facts, I have formed the opinion that the origin of this disease is intestinal parasites; in other words, it is caused by worms attacking the mucous membrane of the horse's digestive organs. This they do in countless numbers, and as larva, or as they escape from their ova, set up intense irritation in the bowels. This is conveyed by certain nerves to a certain set of muscles, as will be explained further on, and involuntary muscular action is the consequence. Based on this foundation, my hypothesis is fully supported by the symptoms, peculiarities, and progress of this singular affection.

No one is able to produce this disease at will, but certain places are known

to be liable to produce it; and, again, it is noticed to originate at certain seasons of the year, and recoveries take place under well-defined conditions.

The localities favourable to its production and propagation are grazing paddocks. It has never occurred in stable-fed horses, but may and does occur in horses that occasionally run into a paddock and are stable-fed also. Such paddocks are cold, wet, and badly drained, with swampy patches—clay soil where gum and oak trees, and sour herbage, such as coarse and fine tussocky grasses, and the weeds sorrel, Rumex acetosa, Hypochœris radicata, and helichrysum, scorpioides, and apiculatum grow. These have no poisonous properties, but thrive in moist places. Hills, vales, and river borders possessing the above characteristics are liable to become the home of this plague; but there is little fear of its appearance without being introduced.

Its commencement is only noticed in the summer months; most of the cases I have seen having cropped up in January and February of this year. About Christmas there was a light rainfall after a long drought, and at the end of spring there was a rush of vegetation, and at the same time of parasitic life. No combination of circumstances could be more favourable for the development of the lower organisms from their ova, in which condition they have been dormant, waiting a suitable season for their development; and this is the season that the migratory parasites of the horse enter his stomach and bowels with food and water, in the form of minute larva, there to find their natural habitat and food, grow and attain sexual maturity, and during the ensuing months they are entertained at the expense of their host; finally discharging their ova, or being themselves discharged in the animal's excrement, and so scattered abroad. Some become incepted in the animal's tissues, and in that manner enter the stomach of a carnivorous animal or bird of prey, and thus their distribution is extended and their cycle of development ensured.

The symptoms of this extraordinary affection are very marked and distinctive, but require a veterinarian's discrimination to show its distinction from other diseases to which horses are liable.

(To be continued.)

Proceedings of Veterinary Medical Societies, &c.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this association was held on November 26th, at the "Junction" Hotel, Didcot. The members and visitors were entertained to a sumptuous luncheon by Mr. Drewe, of Abingdon, who also placed wine and dessert on the table for the business meeting. After luncheon the members proceeded to the transaction of business. The president of the association, James F. Simpson, Esq., Maidenhead, occupied the chair. The minutes of the previous meeting having been read and confirmed, the treasurer of the association, Mr. Walker, of Oxford, then made his financial statement for the past year, which showed a satisfactory balance at the credit of the association.

The following gentlemen were then unanimously elected office-bearers for the ensuing year, viz.—President, Henry L. Simpson, Esq., F.R.C.V.S., Windsor, who also was congratulated by the members of the Association on his being elected mayor of the royal borough for this year; Vice-Presidents, Messrs. F. W. Wragg, London, G. A. Drewe, Abingdon, A. Wheatley, Reading, J. F. Simpson, Maidenhead. Mr. Walker, of Oxford, was re-elected Hon. Treasurer, Mr. Kidd, of Hungerford, Hon. Secretary. On the motion of the Secretary, seconded by Mr. Flanagan, it was unanimously resolved to

offer to the Council of the Royal College of Veterinary Surgeons, to put in a stained glass window in the front wall of the board-room. Several interesting *post-mortem* specimens were then produced. Mr. Wheatley exhibited a calculus taken from a retriever bitch, also a tumour in the brain of a horse. Mr. Varney, of Winslow, exhibited the fractured lumbar vertebræ of a horse. Mr. Wragg, of London, exhibited two specimens of very bad sand-crack. Mr. Wilson, of Berkhamsted, then read the following paper on "Anthrax:"—

GENTLEMEN,—When your President did me the honour, a short time ago, of asking me to introduce the subject of Anthrax for discussion by the members of this Association at your meeting here to-day, he very kindly intimated that he would not expect me to prepare an exhaustive and elaborate paper upon this exceedingly fatal disease, but that you would be satisfied if I would put a very few facts together and offer a few practical remarks upon the subject, more especially as it is now scheduled under the Contagious Diseases (Animals) Act.

The etiology of this disease, as you are all well aware, is due to the presence of a special microbe in the blood, termed the "Bacillus Anthracis," and we, as members of a scientific profession, are not justified, if called in to give an opinion on a *post-mortem*, in stating it to be a case of Anthrax, unless we can clearly distinguish, by the aid of a microscope, the presence of these microbes in the blood.

The researches of Koch and Pasteur have done much to bring clearly before us the life, history, and true character of this bacillus, but as Mr. Raymond so ably demonstrated this in the admirable paper he read before the members of our Association at the last meeting, I am sure you will excuse my passing on to the more practical details which concern us as country practitioners. It is highly desirable that the veterinary surgeon should be able to diagnose the disease at the earliest possible moment, as, by the steps he takes as regards isolation, cleansing, and disinfecting, many animals may be prevented from contracting the disease.

It, however, too frequently happens that one or more animals have been attacked, and have succumbed to the disease before we are consulted in the matter; in fact, the first suspicion the owner has that anything is amiss is by finding an animal dead in the morning which was, to all appearances, in good health the night before.

With regard to the causes of Anthrax, there cannot be the slightest doubt but that the introduction into the system of the specific germ is absolutely essential, yet, at the same time, it too frequently happens that the practitioner is quite at a loss to trace the origin to its particular source.

It often happens that animals in a high state of plethoric condition of body are the first victims, hence high feeding has been thought by some to be the cause of the disease. In all the outbreaks that have come under my notice, the animals first attacked were amongst the best as regards condition, hence we may infer that they seem to form a more suitable nidus for the reception and development of the germ.

Bad sanitary arrangements, and unhealthy surroundings also tend to produce a depraved condition of the system, thus rendering animals more susceptible, and when the disease has once shown itself, may be looked upon as important factors in assisting in its extension. The partaking of impure water, especially that which is highly charged with organic matter, is also another pre-disposing cause; indeed, I am inclined to think that much of the spore-cultivation takes place in organically impure surface-ponds and stagnant watercourses.

In addition to having held the Inspectorship, under the late Dairies Order, in an extensive district, I visit the various farms in different counties for a large dairy company, and I find in very many instances, that the water cattle

have to drink during the latter part of a hot dry summer is quite sufficient to render them susceptible to Anthrax, or any other specific disease. When I find this state of things in existence I invariably recommended that in the event of purer water not being attainable, the sale of milk made from such a source should be discontinued.

Anthrax being exceedingly prevalent in the large cattle and sheep-breeding districts of the world, it follows that foreign manures, especially crushed bones, refuse from tan-yards where foreign hides and skins are dressed, or the sweepings from woollen mohair factories, may each and all be the means of introducing the spores of Anthrax into this country. It frequently happens, as I previously remarked, that there are no premonitory symptoms, or if there are, they are so slight, and possibly in one animal only, that they fail to impress the owner or attendant. If it is a milking cow, a slight dulness and diminished quantity of milk will be all that may be noticed.

If they are store or feeding beasts, one may be noticed standing isolated from the rest, but on attempting to drive him away, he quickly recovers from his apparent listlessness, so that those in attendance may think that there is nothing amiss.

The next morning the attendant, on going round, frequently finds the animal dead, having apparently died without a struggle. On the owner being informed of this loss, he either sends for the village butcher, or sets an odd man on the farm to skin him, and they arrive at a probable cause of death, which is usually that of "violent inflammation."

Having been opened on the spot, the offal is thrown to the pigs, and the carcase disposed of in a most practical manner. In from four to six days other animals may appear to the attendants indisposed, or even two or three may have been found dead, before the veterinary surgeon is consulted, and then not infrequently the mischief has spread to an alarming extent.

The first step the practitioner should take, after making inquiries and ascertaining that other animals had succumbed, would be to take the internal temperature of all the animals located near or in contact with the diseased animals, and those whose temperature exceeds the normal by two or more degrees, should at once be isolated from the rest and placed under constant and careful supervision. The symptoms usually observed in our bovine patients are especially those of Pyrexia, which are very sudden and insidious, such as dejected countenance, disinclination to feed, suspended rumination, general lassitude, drooping ears, sunken eyes, rigors, patchy perspiration, irregularity of external temperature, and disinclination to move. In the latter stages generally, lying down, inability to rise, body and extremities cold, delirious, and in some cases comatose, blood-stained mucus escaping from the mouth and nostrils, voiding of black and usually blood-stained fæcal matter, which is often changed to almost pure blood, death taking place very shortly from "*Asphyxia.*"

At this point Mr. Wilson detailed some very interesting remarks on outbreaks with which he had been engaged, and thereby showed the desirability of the practitioner using the utmost caution and vigilance in endeavouring to prevent the extension and recurrence of the disease. He then went on to say that the Order in Council recently issued has some excellent and important bearing upon the question; it provides for the reporting to the authorities of an outbreak of the disease, the inspection and isolation of the affected, the proper burial of the diseased animals, and the cleansing and disinfecting of the premises. "This is certainly an extremely mild order, but I have no doubt the Privy Council authorities had good and sufficient reasons for taking a mild course, in their first regulations with regard to this disease. I am, however, of opinion that the most rigorous steps, ought to be taken at the very commencement of an outbreak of Anthrax."

"The Veterinary Inspector should be empowered to order every diseased animal to be destroyed with the least possible delay, and the carcase and evacuations deeply and properly buried, immediately upon his having positive proof that it is Anthrax with which he has to deal. Every animal that may have come into contact with the diseased one, should be carefully examined at least once a day, and in the event of a rise in the temperature of three or four degrees, it too should be destroyed.

"Perhaps, gentlemen, you may be disposed to consider that I advocate slaughter too strongly, but I can assure you that I look upon Anthrax as one of the greatest pests which the individual owner of stock can have the misfortune to encounter upon his farm. I would even advise that a full compensation should be given for all animals slaughtered by order of the authorities, it being highly desirable that we should rid the premises of such a pest at its very commencement.

"By the instances I have read, you may judge how easily the disease may be conveyed, even to a considerable distance, by small quantities of contaminated blood; and I hold that it is the duty of the many to assist the individual in endeavouring to prevent Anthrax becoming more frequent, or even indigenous amongst us. If, however, the experiments now being carried on by Professor Robertson, under the auspices of the Royal Agricultural Society, for the production of a vaccine, according to Pasteur, from the attenuated virus, prove effectual in rendering animals protective from contracting the disease, my views as regards compulsory slaughter would then be modified."

An animated discussion followed the reading of this paper, in which most of the members present took part.

Mr. WILSON having replied, a cordial vote of thanks was passed to him for his able paper, and also to the President for the genial and courteous manner in which he had conducted the business.

The members then separated, after having spent a very enjoyable and profitable afternoon. H. KIDD, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting of the Scottish Metropolitan Veterinary Medical Society was held in the London Hotel, Edinburgh, on November 17th. There was a good attendance of members. Professor Williams occupied the chair. Office-bearers for the ensuing year were elected, when Mr. Burnet, Maybole, was chosen as president; and Mr. Clark, Coupar-Angus; Mr. Reid, Leith; and Professor Lewis, New College, were elected vice-presidents. Mr. Archibald Baird, Dick College, was elected secretary.

Letters were read from Professor M'Queen, Glasgow, proposing to hold the conjoint meeting of the three associations in the George Hotel, Glasgow, on the last Friday in January, when Professor M'Call will read a paper on Pleuro-pneumonia. The meeting agreed to Professor M'Queen's suggestion, and also to hold their own annual dinner.

Mr. Reid, Auchtermuchty, was unanimously elected a member of the Society.

Mr. RUTHERFORD, Edinburgh, then introduced a discussion on the suppression of contagious and infectious diseases in the lower animals. The subjects he intended to touch were upon veterinary police measures, a subject which was of value to them. Lately they had had some extraordinary police measures, which they as a society might proceed to discuss. They had had police measures employed for the suppression of a disease that did not exist among them. He referred to Rabies in dogs. The act was put into force in Edinburgh, and dogs without owners were destroyed, and that was

done for a disease that did not exist.* Had it been the wish of the magistrates to take off a lot of dogs from the streets, there was no necessity for imposing such cruelty upon other people's dogs. He held muzzling an act of cruelty. The mere fact of muzzling dogs would not suppress Rabies.

The next disease he referred to was Pink-eye. It was reasonably open to discussion whether that disease was infectious or not. The disease was largely owing to atmospherical and soil conditions, and he thought the police measures of shutting up the water troughs wrong. The advice he gave to clients was to give their horses plenty of water and good food, and keep their stables clean, airy, and dry. He held that the disease was not communicable through the stomach, and therefore he considered the closing of the water troughs an act of cruelty to animals and a hardship to owners. The disease, he repeated, was entirely due to the state of the soil and atmosphere, wet weather being conducive to its dissemination.

Referring to Pleuro-pneumonia, Mr. Rutherford said that they had heard a great deal about this disease of late. It was much more common in Scotland and England just now than it had been for seven or eight years. As an Aberdeenshire farmer had wisely said at a recent local authority meeting, the wisest way of dealing with the disease was to go to its origin. Its origin was Ireland. In nearly all the cases he had dealt with, the outbreaks were traceable to either of two great centres—Ireland and the north of England. So long as the rules for the suppression of the disease in Ireland remained as they were at present, Scotland would continue to import the disease periodically. He would not have taken notice of the subject just now, but for some extraordinary proposals recently made as to how to deal with the disease. Some authorities proposed killing. He protested against any such proposal in the matter. The disease was as easily handled as any disease he was aware of. To begin with, they should endeavour to get more rigid restrictions placed on the Irish cattle trade, in order to ensure that only healthy stock might be imported from that country. The system of inspection in Ireland was largely a kid-glove one, and what they wanted in Scotland was some guarantee—by a system of branding—that animals which were sent to the market came from healthy herds, in which the disease had not been for some time. In cases of doubt, every animal should be quarantined. Another thing he would recommend was increased stringency of police regulations in this country. He thought the law, as it stood at present, was very nearly enough to reduce the disease to a minimum, if effectually carried out. He heard it stated the other day that Pleuro had been existing for two years, and during these two years it had been the commonest thing in the world for veterinary surgeons to diagnose for Pleuro-Pneumonia, and, if they discovered it, to leave it to the choice of the owner as to whether or not the animals should be destroyed. What was the remedy for that? He thought that all veterinary surgeons should be inspectors under the Contagious Diseases (Animals) Act, and then this indifference as to the fate of affected stock would be overcome. All veterinary surgeons, he held, should have power to deal with the disease as they themselves deemed expedient, independent of the owners of the animals, and be bound to report its presence. He thought some local authorities dealt niggardly with their veterinary inspectors—(hear, hear). He had a statement made him the other day by a veterinary surgeon on this matter, and the proposal made to him (the veterinary surgeon) was ridiculously absurd. He would also recommend local authorities to deal more liberally with owners of stock. He held that stock-owners would report outbreaks of disease much more readily than they did, if they had a guarantee of more liberal compensation. Now, by owners doing this, local authorities would have an opportunity of taking proper steps towards eradication of the disease. If municipal taxes were not sufficient to admit of more liberal com-

pensation being given, he would, in view of the importance of the subject, cover it by an Imperial one. He then referred to the means of preventing and curing. Slaughtering, he said, undoubtedly put an end to the disease, but by this method they involve stock-owners in an enormous expense, and it does not necessarily kill out the contagion. And it sometimes happened they had to kill cattle which it was impossible to replace, while they at the same time were in a manner destroying public money. He held, therefore, that slaughtering was impolitic, and, in view of what they now knew of inoculation, was entirely unnecessary. His proposition was to make inoculation a compulsory operation along with slaughtering, where the disease was known to exist. By that combined method the disease would soon disappear. A veterinary surgeon could as easily perform the inoculation operation as take his breakfast; still, many objections to that system had been, and were being raised. Some years ago when he mooted it first, it was condemned right and left; but since, he had had many converts, and amongst them was Professor Brown, of London. He concluded by expressing a sincere conviction that inoculated animals would not produce disease if the operation were carefully performed, which it must necessarily be in every case. (Applause).

Professor MACFADYEAN said that he would endeavour to controvert several of the views just expressed by Mr. Rutherford; and although he might do so in firm language, he would do it with the greatest good-nature. He would confine his remarks chiefly to the Pleuro-pneumonia question; but with regard to "pink eye," he would say, in passing, that Mr. Rutherford did not appear to be a careful or reliable experimenter, if he thought he was justified in framing a general law from the negative results of two experiments. Speaking of Pleuro-pneumonia, Professor Macfadyean said they might recognise four methods of dealing with the disease. The first of these was the method of general compulsory inoculation of all the bovine animals in this country. No sane man would recommend that method, for the very good reason that the aggregate deaths from the operation would far exceed the present annual loss from Pleuro-pneumonia. At the same time, he said, this method, if it conferred an immunity from Pleuro-pneumonia, equal to that conferred by Pasteur's vaccine against Anthrax, might reasonably be expected to ultimately suppress Pleuro-pneumonia. The second method of dealing with the disease was that advocated by Mr. Rutherford, viz., slaughter of the affected animals, and compulsory inoculation of all animals that had been exposed to infection. The advocates of this method claimed for it that it would, if put into general operation, ultimately eradicate the disease, for, say they, all the animals already affected would be slaughtered, the healthy would immediately be protected by inoculation, and the virus that already contaminated the building, being unable to find the system of an animal in which to propagate itself, would soon die a natural death. He would endeavour to state clearly his objections to that train of reasoning, or of assumptions, as he would prefer to call it. Would all the animals already affected be slaughtered when the veterinary surgeon was called in to treat an outbreak? He said "No" to that question. He believed that the advocates of inoculation said that they had two crucial tests by which they could weed out the animals already attacked. The first of these was thermometric observation; the second was inoculation itself. With regard to the first of these, he was going to put a question to Mr. Rutherford, or any other member of his way of thinking, viz., What were the distinctive characters of the temperature-chart of Pleuro-pneumona? Unless he was told explicitly in what respects it differed from other conditions of abnormal temperature—simple Pleurisy or Pneumonia, Tubercle, or acute Indigestion, for example—he would maintain that some of them had been guilty of making a loose

statement that might find credence with the lay public, but would not be accepted by that meeting of professional men. He denied, moreover, the accuracy of the statement that the affected animals would be indicated to them by watching the effects of inoculation, since those already affected would not "take" the inoculation. His own observation enabled him to say that a cow already affected with Pleuro-pneumonia might "take" the inoculation, and show precisely the same inoculative lesions in the tail as an otherwise healthy animal. To prove his contentions, and show that those were not mere fanciful objections, Professor Macfadyean cited cases in which he had made post-mortem examination of cows inoculated one month previously by Mr. Rutherford. These cows showed the usual inoculative lesions in the tail, and at the same time they had Pleuro-pneumonia in their lungs. And, in passing, he would ask Mr. Rutherford to reconcile this with his published statement that he had never failed to arrest an outbreak within three weeks when called in early; and as the last was a rather wide saving clause, would he also tell them what he meant by being called in early? To show the danger of affected animals escaping, Professor Macfadyean said that one of the cows referred to was not known to be the subject of Pleuro-pneumonia until it was killed, and yet the owner stated that Mr. Rutherford had had this animal under observation. Again, he held that any statement to the effect that the virus in a contaminated building would die a natural death, was a mere assumption; for on that point they could have no accurate information until the micro-parasite of the disease had been isolated and cultivated artificially. Another question that he would like to notice here was this—Does inoculation of the tail produce Pleuro-pneumonia? He held that careful reasoning compelled them to answer in the affirmative. He had now stated what appeared to him to be serious objections to the practice of inoculation, and he invited the advocates of the practice to explain them away if they could. He was quite open to conviction, but those who favoured inoculation must not be angry if he demanded a reason for the faith that was in them. The third method of dealing with Pleuro-pneumonia was that of compulsory slaughter of the affected, the isolation of those that had been exposed to infection. That method now stood discredited by its results. The fourth method was that of compulsory slaughter of the entire herd—both the affected and those that had been exposed to infection. He unhesitatingly expressed his belief that this plan, if put into operation, would in a short time, and at a trifling cost, as compared with the accumulated annual loss from Pleuro-pneumonia, stamp out this disease just as effectually as it had stamped out Rinderpest and Sheep-pox.

Professor Walley said he had just caught the president's remark that he wished subsequent speakers in this discussion to be brief in their observations. He asked him how it was possible to answer with brevity such attacks as those which had been made upon him by Mr. Rutherford, for to no one else except himself did his strictures apply, as he was the responsible veterinary adviser to the magistrates of this city. Mr. Rutherford, unfortunately for himself, had not taken the trouble to make himself acquainted with facts before venturing upon the course he had pursued in the matter. He said that the magistrates put in force the provisions of an Act for the suppression of Rabies when no Rabies existed, or had existed for years, in the city; further, that they were guilty of initiating a ridiculous and cruel proceeding in muzzling dogs to suppress a disease which did not exist, and of a still further cruelty in the method adopted of destroying the seized dogs; and that a small commission had met and seen one or two dogs killed by drowning and by the lethal chamber respectively, and had reported in favour of the barbarous method of drowning. Now, what were the facts? The Rabies Order came into force on the 30th September, and nothing whatever

was known about the issuing of such an order until some twelve or fourteen days before that date. The magistrates' order came into force on the 1st of September, one month before the Rabies Order had existence; and it was as early as May that he was consulted as to the advisability of issuing orders in reference to stray dogs, and the advice was asked, because numerous complaints had been made by inhabitants of the city to the magistrates and police authorities, and a number of letters had been written to the newspapers as to the unusually large number of vicious, dangerous, and useless dogs at that time in the city. He did not advise muzzling, but the magistrates were bound to include this in the regulations if they took any action in the matter, as the law gave them no option. As to the commission of which he spoke, no such body ever had existence. As responsible officials, the Superintendent of Police and himself initiated the inquiry, and that, too, on account of the strictures which had appeared in the public papers; and Mr. Cuthbert, the inspector to the S.P.C.A., was asked to attend. Twelve dogs were despatched by drowning and three by the lethal chamber. By the former mode death took place in from twenty-five to thirty seconds, by the latter in from twenty to thirty minutes. Which, he asked, was the most cruel proceeding? The so-called lethal chamber was not a lethal chamber at all in the proper acceptation of the term—it was little better than a stove. He denied that muzzling was cruel, as dogs quickly became accustomed to it; and any temporary inconvenience or distress arising from it was more than counterbalanced by the immunity given from painful wounds inflicted in fighting, and by the protection afforded against the deleterious effects of decomposing matter picked up in ash-buckets and such-like receptacles. As to Influenza, he most emphatically combatted Mr. Rutherford's opinion that it was not infectious. He could bring forward fact upon fact to prove that it was; and that gentleman must know, or ought to know, that when a number of horses were congregated together at a water-trough, with their heads in a circle, they must necessarily inhale each other's breath. The advice to close the troughs was not given because it was thought that the disease was infectious by drinking contaminated water (though Mr. Rutherford had not proved the contrary), but because it was believed to be a means of at least minimising the danger of infection, and because owners of large studs of horses had complained about them being left open; and as soon as he was convinced that the disease existed, he unhesitatingly advised their immediate closure, and should do so again under like circumstances. As to the charge of cruelty, it fell to the ground in the face of the fact that water-taps are provided at every trough. In reference to the question of suppressing Pleuro-pneumonia, it seemed to him that Mr. Rutherford did not clearly comprehend the meaning of the two words "prevention" and "suppression," or, if he did, he mixed them up in rather a strange fashion. Mr. Rutherford had referred to the share taken by Ireland in disseminating this disease. If he would take the trouble to look up his (Professor Walley's) published writings on the subject, he would see that he long ago directed attention to Ireland as a sinner in this matter; but the importations of the disease into this city, and into Scotland, had not all come from Ireland, but many of them from the north of England, and the former country had frequently had laid upon her the burden of a sin which did not belong to her. As to the laxity frequently observed in the matter of applying the provisions of the Contagious Diseases (Animals) Act, he had also over and over again directed attention to it, and should continue to do so. Now, as to inoculation, one would think that he was a determined opponent of the operation. He defied Mr. Rutherford, or anybody else, to show that he had ever done or said anything that would warrant him in arriving at such a conclusion. He had said, and he repeated, that inoculation was only useful, and should only be practised for the purpose of suppressing out-

breaks of Pleuro-pneumonia in places where cows were intended for slaughter immediately they had ceased to be profitable as milkers, or in the case of store stock being fattened for the butcher; and that, as a means of *general prevention*, it was useless and harmful, as no person could say in an inoculated and infected stock how many members thereof had the lesions of the disease in a circumscribed and quiescent form in their lungs. That such animals were capable of propagating the disease he had ample proof, and he would only quote one instance in which a number of cows in a dairy were inoculated successfully, though the operation was not performed by Mr. Rutherford, and one of them was subsequently allowed to stand in close proximity to four newly-bought-in cows (animals purchased from places where no disease existed), with the result that, one after the other, they contracted the disease, when the owner had the residue of his old stock slaughtered, and in the lungs of the cow in question a liquefying mass of Pleuro-pneumonia was found. The statement that an outbreak of Pleuro-pneumonia could be suppressed in three weeks is not in accordance with fact. He had also numerous proofs of this, but would only give one. The disease was detected in a byre on the 22nd March; the cows were inoculated the same day by Mr. Rutherford. On April 10th he removed one cow with the disease, on the 13th April two others, and on the 8th of May a fourth. In two of these the lesions were recent, in the other two they had been in existence for at least three months; in three of the cases it was denied by the owner that there was anything the matter, and the two old cases, had they not been detected and slaughtered, would probably have stood out the period of quarantine, and had they been breeding-stock would, in all probability, have been sold or used as such, and thus would have perpetuated and disseminated the disease. He repeated what he had frequently before stated, that in his opinion it was not a question of suppression but of prevention, and that they would never eradicate Pleuro-pneumonia from the country by inoculation. Other and more radical measures must be put in force; and as to the failure of the Netherlands Government to get rid of it by inoculation being attributable to faults in the method of operating, he could only say that if the father of inoculation in European countries, viz., Willems, of Hasselt, failed in suppressing the disease, with all the power of the Government at his back, and with the full control and supervision of the practice, no individual or body of individuals in this or any other country were likely to be successful in that direction. If they were sincerely desirous of ridding the country of this scourge, they should not advise the adoption of half measures, and if there is at the outset some sacrifice in the adoption of radical measures, the loss would be a hundred times repaid by the freedom which would be restored to trade in cattle, both at home and for exportation.

Mr. RUTHERFORD, in replying to Professor Macfadyean's questions, said his twelve years' work in inoculating was a work of demonstration. He did not require to argue with his clients on the subject; they knew it to be a fact, and he was prepared to prove that it was a fact. There were living proofs of the success of the operation, and he thought the cases mentioned by Professor Macfadyean had been cited with very bad taste. He could assure Professor Macfadyean that animals, if skilfully inoculated, would neither contract nor exhibit disease.

Professor MACFADYEAN begged leave to protest against Mr. Rutherford's imputation of bad taste in citing the cases that he did. He was bound to cite cases to prove his contentions, and he took Mr. Rutherford as possessing at least average skill in diagnosis, to show that some cases of Pleuro-pneumonia might escape detection. He had no intention to discredit Mr. Rutherford as an inoculator; and, before he sat down, he would like to put

to Mr. Rutherford a question that escaped his memory while speaking before. The system advocated by Mr. Rutherford had been tried and had failed in the Netherlands. Would Mr. Rutherford tell them plainly what circumstances led to this failure in the Netherlands, and what different circumstances would, in his expectation, be in operation to insure success in this country?

Mr. RUTHERFORD, in reply to the last question, said he did not know that the operation was tried in the Netherlands; but he knew that the operation, if rightly performed in Scotland, would not fail. There were now several cases in which inoculation was being tried in this country, and he had no doubt that these would prove it beyond the shadow of doubt. (Hear, hear).

Mr. CUNNINGHAM, Slateford, said it had been asserted that he had been quite an enthusiastic disciple of Mr. Rutherford. He refuted the charge. He supported Mr. Rutherford simply because he tested inoculation for himself, and found it a salutary preventive of the spread of Pleuro-pneumonia. Some ten years ago he, along with Mr. Rutherford, visited a centre of disease, in which a cow had died from its effects, and they inoculated the whole herd of forty head. Mr. Rutherford then remarked that they had broken the back of the disease there. And that they proved to have done, which he had done many times since then by the same process. He had to deal with seven affected herds, and if stamping out had been resorted to it would probably have cost £1,000 or £1,500, instead of £300 or £400.

Mr. CAMERON, Berwick-on-Tweed, referred to the want of uniformity in the employment of veterinary inspectors. He pointed to Northumberland, one of the largest counties in Great Britain, as an example. In that county there was but one inspector, and the ordinary V.S. had nothing to do with the disease further than determining whether or not it existed.

Professor WILLIAMS, in winding up the discussion, considered the appointment of one inspector in each county in England a mistake. The result was jealousy among the other veterinary surgeons. When a case occurred and a veterinary surgeon was called, he was not bound to tell the police, and, without saying anything, the animals were killed and the herd scattered. He would reserve his remarks till the Glasgow meeting, when Professor M'Call would read a paper on the subject; but for several years he had experimented on Pleuro-pneumonia, and he thought inoculation had done a great deal of good. He was not prepared, however, to give a decided opinion till some large experiment had been made at the public expense. He looked upon Pink-eye as a disease due to the atmosphere and the soil, and considered the closing of the troughs as a piece of cruelty.

A vote of thanks was given to Mr. Rutherford, and the meeting separated.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE eighty-ninth quarterly meeting of this Association was held in the Medical Institute, Hope-street, Liverpool, on the 12th of November, 1886; the president (E. Faulkner, Esq.) in the chair. There were present Prof. Williams, Messrs. Baron, Edwards, Greaves, Hopkin, Ingram, A. Leather, Locke, Morgan, Jas. Storrar, P. Taylor, W. A. Taylor, Woods, Whittle, and H. Sumner.

The PRESIDENT read a letter which he had received from Mr. J. S. Hurndall, Honorary Secretary of the Association, intimating that, owing to his having bought a practice at Blackheath, near London, his absence was unavoidable, and that Mr. H. Sumner had consented to fulfil his secretarial duties for that evening.

Mr. SUMNER was instructed to write to Mr. Hurndall, expressing the

regret of the meeting at his removal and the high appreciation of his abilities displayed in carrying out the duties of secretary.

The notice convening the meeting was read by Mr. SUMNER, and the minutes of the previous meeting were read and confirmed.

Mr. W. A. TAYLOR, in deference to the wish of the members present at last meeting, withdrew his resignation.

Mr. SUMNER read a letter which the Secretary had received from Mr. Thos. Leather, regretting that at present he had to adhere to his former decision.

Mr. Thos. Leather's resignation was then formally accepted.

A vote of thanks was unanimously accorded to the retiring officers, and the following gentlemen elected officers for the ensuing year:—Mr. R. C. Edwards, of Chester, President; Messrs. A. Leather, and N. Baron, Vice-Presidents; Mr. Geo. Morgan, Treasurer; Mr. Hy. Sumner, Secretary.

The PRESIDENT called upon Mr. Greaves to open the discussion on Prof. Walley's paper, "The Functions of the Veterinary Surgeon in the Inspection of Horses at Shows, as also for Purchase."

Mr. GREAVES said:—

In opening the discussion on the above subject this evening, I beg, in the first place, to observe how much I honour Professor Walley for the great kindness he has shown to us in attending our meeting, and for the labour he has bestowed upon this subject, as exemplified by the exhaustive and enlightened manner he has dealt with every phase of this deeply-interesting and important section of our duties. In fact, if no discussion had taken place at all, much less a second meeting, to further consider the points involved, there was ample matter before us to satisfy ordinary mortals, but the singular part of it is this, that the main subject-matter is looked at from different points of view by men with different ideas, even by men of equal experience and equal intelligence.

The Professor decided to write upon this subject in consequence of an article appearing in the "Scottish Agricultural Gazette Almanack" for 1886, disparaging the services of veterinary surgeons, averring "that dealers and farmers are, as a rule, better judges of soundness than surgeons." It is this statement, and the general tenour of the article, that the Professor is annoyed at and complains of; and well he may, if there is no ground for such an assumption. Further on the Professor says:—"Large premiums are offered by our agricultural societies for the best sires; and it is, I aver, a sin and a shame that every possible precaution is not taken to ensure that these animals are worthy of the position to which they are elevated; in most instances in England the question of soundness, and particularly the question of freedom from hereditary defects, is looked upon as of primary importance." These sentences will be freely endorsed by every enlightened veterinary surgeon. But, let me ask, Is not self-interest itself sufficient inducement for the breeder to see to it that the sire is true and sound? Further on he says:—"Not only does the hereditary transmission of defects stand out prominently in connection with the selection of sire and dam; but the still more important question presents itself, viz., What will be the probable result of these defects when the horse or colt is in due course of time put to hard work?" We again see and agree in the full force of this contention. Then the Professor asks the momentous question, viz., *Who is the best qualified to give the answer?* He goes on to say the veterinary surgeon, of course; but on this subject there may be a difference of opinion, and who is to decide when doctors disagree? What does Professor Robertson say upon this subject? He says: "Veterinary surgeons, as a rule, are not the best men to be appointed as judges of horses and cattle." Although I know there are many veterinary surgeons fully competent to be judges, I also know that there are many others quite unfit for the office, and I also know that there are

many educated men, not professional men, who have been born and brought up, as it were, amongst high-class horses and cattle, whose opportunities of gaining this special knowledge, whose constant training has fully adapted their minds, their habits of thought, their whole intelligence to see at a glance imperfections and deviations from true conformation, the leading points which constitute useful form and perfect symmetry—whose opportunities and chances of observation by far exceed those of any veterinary surgeon, even those placed in the most favourable circumstances. I, therefore, take exception to the Professor's paper on this point. I know there are many men outside our profession who are educated, and who, by diligence in studying these subjects, are competent to form a correct opinion on these matters, and who can tell as well as we can which is the best animal in each class. Do not let us get it into our heads that we are infallible, or that we possess a monopoly of that precious ingredient in human nature, common-sense. Depend upon it, it is offensive to many enlightened, educated, and experienced agriculturalists. You may laud yourselves and your profession as much as you like; but do not let us run away with the idea that all men are incompetent to form an opinion upon these matters unless he is a professional man.

The Professor then says, "If lasting success is to be attained, only sound sires and sound dams should be selected." This is true; but it is not all, it is only part of the truth. Conformation, size, and action must also be taken into account. But there are some horses whose natural conformation assumes the appearance of an abnormal growth. This is a fruitful source of contention and disputes; and at the Agricultural Societies the veterinary referee should exercise common-sense rather than scientific quibbling. The late Professor Spooner, who was the veterinary referee to the Royal Agricultural Society, carried this to such an extent that the Committee found it quite impossible to work with him. Professor Varnal and Mr. Hurst, the Professor's successors, performed the duties harmoniously and satisfactorily. Professor Walley goes on to say: "That veterinary surgeons differ materially amongst themselves, not only as to the existence of a particular defect in a particular animal, but also as to the practical significance of acknowledged defects, must be admitted."

Now, I am inclined to the opinion that where these differences occur most frequently is where there is a deficiency of practical experience, or else where there is a superabundance of scientific knowledge. Do the airing of scientific crotchets, I would ask, add dignity to our profession, or is it to the advancement of science—nay, does it not prevent us from receiving that high appreciation our noble calling entitles us to? Let us object, and condemn science without practical knowledge. Had we not an example of what I mean in the discussion at the National Veterinary Association meeting in Edinburgh last August, when two highly-educated and eminently scientific gentlemen entered into the arena of debate on the subject of microbes and the bacillus of Louping-ill? Did they, during the two or three hours they occupied, I would ask, throw any light whatever upon the subject in question? It may be said it was a war of words about the vapours of an unknown world—nay, did they not leave confusion worse confounded? Are not such dissensions of very questionable utility? I am not decrying all scientific investigation; but let there always be a sound guiding principle compassing some grand and useful result. It is true there are some questions which occasionally crop up which require more than the wisdom of Solomon to settle or to solve; but, Heaven be thanked, men of sense leave these matters to other men to peer into and to wrangle it out. To arrive at sound and just decisions in important cases, I fully endorse what he says about a conjoint certificate of two out of three veterinary surgeons, and for such to be final.

Examination of Horses for Purchase.

In the examination in respect to soundness of horses, the veterinary surgeon may be in the habit of being over-particular, making molehills into mountains; he may possess an impracticable idea that all dealers are rogues, and, therefore, the horse must be in some way or other a screw; or he may be under-particular,—be a little careless, or have an overweening confidence in himself; he may simplify matters too much. I say the medium course is the soundest and wisest course to adopt. We will just follow these two courses in their logical conclusions. We are told in that best of all books that "no man is perfect—no not one." Then why do we expect perfection in the horse? There are scores of horses with a cataract in the eye. If you examine him ten years hence, it will be found precisely the same in its condition and its character. There are hundreds of horses with small sidebones going sound, which, if you examine them in ten years' time, you will find it in the same condition it was. I am now speaking of cart-horses five and six years old, who are to be put to town hard work. I say in such cases as these for the veterinary surgeon to make a dead-set against them, to reject them all without distinction, would be doing an injustice to your employer, to the horse, and to the seller. You prevent your employer buying a useful horse at a little less money; it may be he will probably buy another horse without these small defects, but in other respects a less valuable or useful animal, he being not so good a worker, or so good a wearing horse. How often do we find that when a horse fails after purchase, it is ten to one it is some other part than that we have condemned! One of the most perplexing questions to solve correctly, requiring the greatest discrimination, is to settle in some cases how to distinguish between normal and abnormal growths.

It will be within the knowledge of every veterinary surgeon of experience, that there are cases in which he rejected horses as being unsound which time and severe work proved were sound in the parts judged defective. I have known the late Mr. John Lawson, of Manchester, and the late Mr. John Ellis, of Liverpool (men of long and extensive experience), whose judgment and practical opinion were second to none in the whole profession, freely confess that they have frequently made mistakes in rejecting horses for unsound hocks, when having an opportunity of seeing these very horses go through heavy hunting season after season, without the hocks for one moment failing them. I feel certain that a horse may have a strong hock, one hock larger than the other, and yet it shall be absolutely free from disease, either present or past. I would here say it is quite necessary that we point out every actual, real defect to the purchaser. If the horse is well seasoned, six years old, has never been lame, uses his hocks well, pass him; but let the purchaser have the option of final decision; let him bear some of the responsibility; but I say again do not make molehills into mountains; let your advice be always tempered with sound judgment. I know in blood horses, carriage horses, hunters, or horses for breeding purposes, every care possible must be taken, the best practical judgment must be exercised; but even in these cases the same rule holds good, viz., that common-sense, fortified by experience, should in every case enable you to judge, to decide, and to advise. Give the dealer credit for possessing some common-sense, knowledge, and honesty nearly if not equal to a professional man. I know some very cautious veterinary surgeons, guided by conscientious convictions, reject any and every horse they examine, if in any particular there is a deviation from nature; they call it a defect; a defect is an imperfection, and an imperfection is an unsoundness; hence they must be rejected. I admit that there are some cases which invite a variety of interpretations; but let us be practical. Why, gentlemen, if I acted so, I should have to reject nearly half the

horses I examine. My employers could not find horses to carry on their business; I should lose their good opinion and their patronage. In our firm I, out of curiosity, just looked over our books for the last two months, April and May, and found we examined 70 valuable horses each month in respect to soundness. For one firm I have examined over 3,000 valuable cart-horses as to soundness during the last 52 years. For three other firms I have examined nearly as many.

The Professor says:—"It is a matter for melancholy reflection that the very large majority of horses submitted to us for inspection are imperfect, and that if a deal is to take place, a large reduction in price has, in many instances, to be made, or a special warranty with some grave defect given." Now, with all due respect to the Professor, my experience of over 53 years in a large practice is the reverse of this. Further on he says:—"The function of veterinary surgeon is protector and arbiter, to protect the unwary purchaser from the too often evil designs of the unscrupulous vendor." My experience does not justify me in taking the same view of the subject, but I hesitate not to say it is not the duty of the veterinary surgeon to exert his ingenuity to discover some defect with the object of showing his talent and exhibiting the amount of scientific knowledge he possesses. Again, the Professor says:—"The veterinary surgeon has to call to his aid the special knowledge he has gained in the course of a long and varied practice as to the probable influence of certain common defects to which the equine species are pre-eminently liable." This is an interesting point, and it brings me to the last part of my task. It may be truly said that a true all-round veterinary surgeon must be born one; he cannot be made. We will take the case of a young veterinary surgeon, or one who has had only a limited experience in examinations of horses, who, we will assume, is timid, scrupulous, and conscientious, almost afraid to pass any horse; he is troubled with many doubts, fears, and fancies, and his science comes in and only tends to mystify the matter still more. I am speaking, gentlemen, of what I know to be a fact; I have passed through it myself in my younger days. Well, the expression of doubt, the oscillating between two opinions, lowers you in the eyes of an experienced practical horseman; causes him in many cases to lose confidence and patience in you. But we will suppose the employer is not an experienced horseman; he has confidence in you, and is led by your advice. He returns the horse owing to some defect which you point out to him; another and another horse is brought to you and rejected; this non-experienced man after a little time gets tired, loses patience and often goes elsewhere, or it may lead him, as it often does, into contention and litigation. But you may say to me, "Suppose this practitioner happens to pass a horse with a curb, a splint, a spavin, a sidebone, or a roarer, and in a few days he brings the horse back to him, what then?" I reply, If he has carelessly or ignorantly overlooked it, or seen it and not fortified himself by explaining it to his employer at the time of examination; if it is something which could not have taken place since the purchase, he must abide the consequences; whether he be a young or an old practitioner, he is liable to be held responsible for any loss that may arise. It is when the individual on the one side, or, on both sides, is of autocratic spirit, or overbearing temper, insisting upon his legal rights to the uttermost fraction, that the difficulty arises. The matter in dispute may be important or unimportant: that is of little moment; but it often happens that distrust, dissatisfaction, and animosity are kindled in the minds of the parties. But even then, in the majority of cases, a little tact and concession employed by a third party will, in almost every case, tide over the difficulty, when at the same time the two most interested are deaf to all remonstrances from each other. This brings me to another phase of this question, viz., *The Veterinary Mutual Defence Society*. There is, as most of you know, a Society existing

ready and willing to listen to you, and sympathise with you in your trouble. They at once inquire into the nature of the case, and if they find there has been a want of skill and care, and you have in consequence rendered yourself responsible, they do not leave you in your hour of need; they will advise with you and give you every assistance in their power by endeavouring to bring the matter to an amicable and honourable settlement if possible. But if, on the other hand, they find that you have exercised ordinary skill and care in your examination, and there has been no hitch in the whole case, then they decide to defend you, provide all legal assistance, and bear all expenses, and you will have all the moral support and influence that can be provided in the profession, in order to clear your professional character and establish your reputation. I think, this being the case, it will be self-evident to every member of my profession, how desirable it is to become a member of this society at once, and to become possessed of the advantages and the privileges which the society secures to its members. We invite you all to become members.

Professor WILLIAMS said that the subject was a most important one, and should be discussed in an impassionate manner. There appeared to be two opinions as to the desirability of veterinary surgeons officiating as judges at shows. Professor Robertson and Mr. Greaves were not in favour of the appointment as judge, and in some respects he agreed with them, as many gentlemen who act as judges make special breeds and classes their study. With few exceptions, this cannot be said of the members of our profession. He contended that a veterinary surgeon in the list of judges, or present at the show as an officer of the Society, was indispensable, notwithstanding Macgregor's opinion to the contrary; and that a veterinary surgeon was a better judge of soundness than any unqualified man, whatever his experience. He (the Professor) agreed with Mr. Greaves as to professional crotchets, but considered such unavoidable. A veterinary surgeon cannot be too particular in dealing with hereditary diseases, as roaring, sidebones, etc. He might add that he considered an animal suffering from the effects of laminitis unsound for stock purposes. In all large and important shows the Professor would advise the appointment of three veterinary officers. In the "inspection of horses for purchase," soundness prior to and after purchase should be considered. Young practitioners sometimes err on the side of over-cautiousness, and reject many horses which might make useful animals. As an illustration, Professor Williams took the question of hocks, and stated that he knew many horses with "odd" hocks which had never interfered with their usefulness. We are taught to look upon "odd" hocks as diseased, but if the subject under examination has good hock action, freedom from heat over the enlargement, and is of a suitable age, he would advise a warranty, and not rejection altogether. Professor Williams did not agree with Mr. Greaves' reference to over-scientific men, and said that the exuberance of science does not cause diffidence. Science is a knowledge of facts, and that knowledge to young men helps them out of many difficulties. Young men cannot be too particular. Better have the ill-will of the dealer than proceeding in law.

A full and very interesting discussion followed, in which most present joined, the members being of opinion that no further notice be taken of Macgregor's charges.

The usual votes of thanks terminated a very enjoyable meeting.

HY. SUMNER.

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of this Society was held on 4th November, at the First Avenue Hotel, London. The Fellows attending were Messrs. J. Rowe, F. G. Samson, T. S. Price, F. W. Wragg, G. A. Banham, J. Woodger, W. Roots, F. T. Oatway,

H. D. Gibbings, J. Hall Brown, Arthur Broad, F. Elworthy, J. H. Brown, jun., T. Moore, and A. Broad.

Mr. J. ROWE, the newly-elected president, read the following address:—

GENTLEMEN,—Our Medical Societies have, by general custom, been led to expect from their president an address on his taking the chair at the commencement of the session, and such address is seldom confined to one given subject. I do not propose to depart from the rule. To you who are here to support my entrance into a responsible office, I wish a cordial welcome; I am fully sensible of your good-will, and much gratified by your selection, and assure you that no effort shall be wanting on my part to make this a session of usefulness. Backed by your individual efforts this will not be a hard task. My ideas here naturally lead to a retrospect, and I am privileged to look back on the progress of this Society with exceptional pleasure, and some pride, as, from its formation in 1870 to the present year, I have not discontinued to hold office, my work as secretary from 1872 to 1880 especially making the success of the Society a matter of interest to me. A great benefit of the Society has been to me the extending knowledge afforded of the members of our profession in town and country. The Central Veterinary Medical Society may well pride itself on its success, for its meetings are as ten to four when compared with kindred associations, and though devoid of the attraction of a "dinner to follow" the attendance has been satisfactory, averaging thirteen at each meeting. Since the foundation of our Society many changes have taken place; our professional status has improved, though there is yet much to be desired in this direction; the Government endowment, which is justly due, is still denied us. But we have seen, without its assistance, a new building rise from the old site, and, tardy as some of us have been in our efforts, other workers in our ranks have not ceased theirs. The presidents, notably, have been the men for the place. Of the benefits of our numerous veterinary societies there cannot be a doubt; there are ten or more now existing; ours was, I believe, the third formed. "Know thyself" is a wise maxim, but "Know thy neighbouring brethren better" is equally so, and to these associations is due much of the removal of that reserve and ill-will which once characterized us; and in our continual meetings, and the comparing of notes on interesting cases, a clear gain results to all concerned, which may be represented as a corresponding loss to those who, in a consciousness of self-imposed superiority, decline to profit by the successes or failures of their co-workers. By your vote an eyesore in the college building has been removed by the filling-in of a window with stained glass, and a handsome stained window will soon be fixed in the centre of the front wall; this, I trust, will be a signal for other societies to take a share in the adornment of the building. As many of you are aware, our meetings were for years held in the old building in Red Lion Square, and there is a difference of opinion as to the suitability of our present place of meeting. Generally, I admit, satisfaction is expressed, but, doubtless, on strictly technical grounds the Royal College Building is the more appropriate place; you will judge and instruct me as you desire.

Passing from our immediate interests to the general public, and our connection with it, we are faced with serious difficulties, having important results. A few years back we had the Cattle Plague with its terrible lesson, and our futile efforts to obtain official recognition of the opinion of our best authorities will be remembered; other bovine scourges followed, and have at last been fully recognised and dealt with by properly conceived Acts and Orders.

Now, at last, Rabies has been added to the list of the diseases embraced by the Contagious Diseases (Animals) Act. We have, too, some troublesome and vexatious enactments that are, let us hope, paving the way for

good measures with tangible results. Some may remember the ludicrous abortions in the attempts and suggestions to arrest and cure Cattle Plague. Is not a similar farce being now enacted in the so-called Rabies scare? Witness the many recipes in the daily papers for the cure of Rabies, the wonderful protests of dog-owners against the muzzling edict; and last, but not least, the pilgrimage made to Paris for every injury, actual or fancied, effected by the dog. It is possible, and, I think, probable, that M. Pasteur is on the right track; but I repudiate the idea that anything like a large percentage of the two thousand patients who have visited him were subjects of impending Hydrophobia, and I am not inclined to accept the results printed. Of all men among our profession, surely a specialist of diseases of the smaller animals is qualified to judge. As a dog specialist in this huge town, what do I find? I affirm that throughout the period of this scare I have not had or seen a case of Rabies. But the number of imaginary cases it would be hard for me to enumerate, and that being so, how many of the two thousand abovementioned may bear the same construction. It is much to be regretted that the autopsies, reported as made in connection with the Dogs' Home, are not authenticated by at least two veterinary surgeons, as doubt is widely expressed as to the results. This is not a fitting time or place to enter more fully on the subject. I therefore content myself with this protest, simply ending it by noting the extraordinary absurdity of the edict that muzzles a dog running loose in this town, but considers it safe to unmuzzle him when led. I think you all have known dogs to bite when led, but hope that you have never had (like myself) to pay compensation for it.

But as we are fast approaching the second part of our programme, which should be commenced with good-humour, all differences should be shelved, and it only remains for me to invite you at ensuing meetings to make some sacrifice in order to attend them; to bring forward your cases of interest—papers also, if you can—and not to be sparing in your criticisms on such. It will make these re-unions a pleasure, and cement a mutual regard. Remember, also, that if the paper be short, a good discussion will make ample amends for its brevity. The carrying out of these ideas would make the presidential office a most agreeable one.

At the close of the meeting the members and their friends enjoyed the very successful annual dinner. ALFRED BROAD, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

ON the 22nd October a meeting of the members was held at the Great Central Hotel, Carlisle.

Present:—Mr. Henry Thompson, Aspatria, president, in the chair. Professor Williams, Edinburgh; Mr. R. Rutherford, Edinburgh; Mr. Cunningham, Slateford; Mr. Jos. Carlisle, Carlisle; Mr. Jacob Dawson, Carlisle; Mr. J. G. Bell, Carlisle; Mr. Harrison, Warcop; Mr. John Young, Cockermouth; Mr. Armstrong, Penrith; Mr. John Little, Abbey Town; Mr. Jacob Howe, Keswick; Mr. Chalmers, Longtown; Mr. Wm. Summers, Allendale; Mr. Jos. Donald, Wigton (Secretary); Mr. Crowdice, Haltwistle; Mr. MacIntosh, Dumfries. Also the following as visitors:—Dr. H. J. Webb, Aspatria; Mr. Frank Shore, Aspatria; Mr. Alfred Wilkinson, Aspatria; Mr. Winter, Wigton; Mr, McConnell, Castle Douglas; Mr. McCauley, Carlisle; Mr. Simon Beattie. Annan.

The Instruments, viz., Thompson's Tooth Shears and Ecraseur, agreed at last meeting to be purchased for the use of the members of the Society, were laid on the table for inspection.

Minutes of last meeting were read and confirmed.

Mr. MacIntosh, Dumfries, was elected president for next year. Mr. Jacob Howe, Keswick; Mr. Jos. Donald, Wigton; Mr. J. Chalmers, Longtown; Mr.

H. Pears, Langholme; were elected vice-presidents. Mr. Armstrong, Penrith, was elected secretary. Mr. Henry Thompson re-elected treasurer.

The Chairman, in introducing Mr. MacIntosh to read his paper on Pleuro-pneumonia, and the preventive power of inoculation, said the last paper before the Society was that of Abortion in Cattle, one of vast importance to the veterinary profession. He considered the subject before the meeting to-day could not fail to be of the greatest interest, considering the alarming extent to which Pleuro-pneumonia was now raging in Cumberland and the West of Scotland. He welcomed Professor Williams, Mr. Rutherford, and Mr. Cunningham there to-day, and hoped the members would derive some valuable information from those gentlemen on the properties of inoculation for Pleuro-pneumonia, and now called upon Mr. MacIntosh to read his paper.

Pleuro-pneumonia Epizootica and Inoculation as a Preventive.

The subject of this paper is one, in my opinion, well suited to interest both town and country practitioners, and especially so at the present time, when the number of infected places in the United Kingdom are on the increase, and especially in Scotland, where it has assumed rather a serious outlook; and when we consider that it is to the veterinary profession that the agricultural community must look for some guidance in such a matter, I think the introduction of this subject at a professional meeting of this kind cannot be far out of place. The disease has existed in this country more or less for over forty years, and at the present time we are all at variance, as professional men, as to the best means of dealing with it, and clearing the country of what is annually a serious national loss. It is scarcely necessary, in reading a paper on this subject to professional brethren, to go into the whole pathology of the disease, as I have nothing new or original to communicate. My object is rather to stir up the subject, and induce discussion and interchange of opinions on such an important topic, and one with which the veterinarian hitherto has not been able to cope with any success; and let me also point out that it is the question of inoculation that I wish more particularly to bring before you. Pleuro-pneumonia, then, is a disease of a highly contagious and specific nature, accompanied with fever, affecting the bovine race only, and, as you are aware, is not indigenous but imported.

As the name implies, the lungs and pleuræ are the parts first affected in the ordinary disease, and where the lesions occur. It is an admitted fact that it is due to a specific poison entering the system through the air-passages, and eventually developing in full force in the lung substance. It is of the utmost importance to consider the point of infection, for it appears that the disease, as it occurs in the usual form, is only contracted by inhaling the specific poison, chiefly from the breath of others by cohabitation. But it can also be communicated by healthy animals coming in contact with materials that have received the exhalations of diseased animals, and inhaled the specific germ, when it comes in direct contact with the lining-membrane of the bronchial tubes. It has not been produced by transfusion of blood, and beyond a doubt inoculation does not produce it in the lungs, and it is said that parts of diseased lungs have been eaten by cattle without any results. It is very important for the veterinary surgeon to keep these points in view, as such knowledge must help him considerably in assisting to reduce the chances of infection, and the means by which prevention may be best accomplished, so as to eradicate the disease. That cohabitation is the most certain means of communicating it, there can be no doubt; for beyond the experiments tried, we have the constantly occurring proof of the causes of outbreaks in country places where an animal has been introduced into a healthy stock (itself apparently healthy), and after a time, on the disease manifesting

itself, the imported animal has been found on investigation to have had a chance of contracting the disease.

I have often heard it said, "Oh! but that animal never took the disease." Yes; but in all probability that one had it in a mild form, and communicated it to others, and some of you may have noticed that a first case is often a milder attack than the rest, and the doubt as to whether or not you have a case of Pleuro-pneumonia to deal with, allows of time, wherein much mischief can be done.

The length of time that elapses between the first introduction of the specific germ, and the first appearance of symptoms indicating the complaint, is not easily determined, and differs with different individuals, and has been variously estimated at from two weeks to six months, and even longer; and herein consists one of the great difficulties in eradicating the disease, as during the latter stages of the incubatory process, and while few of the symptoms are visible, depend upon it the disease is communicable to other animals; and in this way it is continually kept in the country.

I would like to state here that it is my firm conviction that while incubation is in progress, if the animals are carefully watched, a slight cough will be noticed long before any of the other symptoms are present, and before there is any rise in the temperature. Among the first symptoms, and along with the cough, which, by the way, is not in the first stages (very different from that of a horse, being bronchial in its character), a close observer will notice the breathing slightly hurried, even while the milk is nothing diminished or the appetite affected. The cough, however, soon becomes worse, and gets shorter and harder, the coat becomes dull, and the animal has less appetite; while, if a milk-cow there is a short supply, and during this stage none of the more prominent symptoms are visible. You will find all the symptoms of acute bronchitis: the animal dull, with a dry staring coat, short, quick breathing, and a cough that would indicate irritation of the bronchial region rather than the pleural; and it is at this stage that the veterinary surgeon frequently has some trouble in determining whether he has to deal with Pleuro-pneumonia epizootica or some other form of chest complaint. The symptoms may not be well defined, and may cause a short period of anxiety, especially if the owner or those interested are pressing for an opinion. The more prominent symptoms are the increasing cough, with occasional shivering-fits, quick, full pulse from seventy to eighty per minute, with bounding heart-action, and all the appearances of pleural-inflammation having been added to the other. The bowels are generally constipated; the temperature rises, and all the symptoms of fever are present; the animal stands with the nose protruded; the spasmodic abdominal breathing becomes plain, the nostrils expanding and contracting with every inspiration and expiration. There is a low grunt on expiration, and a decided tenderness in pressing the hand on the back along the spine. The cough gets painful and frequent, and decided pain is evinced on pressing the intercostal spaces; there is a discharge from the eyes and nose, the elbows turned out, and altogether the animal has a distressed appearance that, with the difficult breathing, make it quite characteristic of the disease, and in the last stages must force upon the mind of the veterinary attendant the nature of the case with which he has to deal. The temperature ranges from 104 to 106 degrees, or even more. On auscultation in the early stages, you will find in the wind-pipe and bronchial region a loud rasping sound, caused by the hurried breathing over an irritated and non-secreting surface. It can also at first be heard in the affected lung, but gradually becomes lost, either from consolidation or effusion into the chest, or both. If the auscultation is continued regularly, the changes taking place in the lung can be followed until the sound is completely lost. I may here state that frequently only one lung is affected, and in several *post-mortem* examina-

tions that I have seen during the last six months, I have not met with the disease in more than one lung, and when this is the case careful comparison of the sides will enable the practitioner to follow the advance of the disease on the affected side, and will also assist him in distinguishing between Pleuro-pneumonia epizootica and Sporadic pleuro. In the latter you have not the bronchial symptoms, and both lungs are generally affected, while the animal never exhibits the same distressed appearance. On the healthy side in Epizootic pleuro you can hear the respiratory murmur and resonant sound, while on the other there is no murmur, and the dull sound on percussion indicates what has taken place.

But I need not waste your time by repeating symptons that the most of you know as well as I do, many of you better; only let me point out to the young practitioner the necessity of having the symptoms well up, as in case of a first outbreak a wrong opinion would be awkward for his reputation.

Whatever difficulty there may be, however, in diagnosing a case of Pleuro in the early stages from Bronchitis or Tubercular nflammation, the morbid anatomy of Pleuro-pneumonia is so clear and defined that no one need be left in any doubt after the diseased organs are exposed to view. The lesions are observable only in the thoracic viscera.

On first opening the chest, with the animal on its back, the first appearance is as if one side of the chest had grown up; the lung seems in a solid mass, and adheres firmly to the sides by bands of fibrinous exudation, and there is also a quantity of fluid in the cavity of the chest, the pericardium generally forming ten parts of the mass adhering to the ribs by the strong bands of exudate lymph, and the altered position of the heart no doubt accounts for the bounding action you can hear on auscultation. The diaphragm is also implicated; but in the worst of cases one lung is clear and of the usual weight, while the diseased one is enormously heavy. On making a section of the diseased lung, the characteristic morbid appearances are clear and well-defined. The marbled appearance need leave no one in doubt. It is caused, as you are aware, by the exudate filling up the interlobular tissue until it becomes hard and firm, separating the lobules and completely blocking up the air-cells, tubes, blood-vessels, and lymphatics, causing one solid mass of disease, and completely destroying any of the functions of that portion of the lung. Occasionally abscesses form before death takes place; but, in my opinion, not often.

The bronchial changes are also very plain. False membranes are found in the trachea, and almost complete closure of the bronchial tubes, the whole having become one solid mass of hepatization of a peculiar marbled colour indicative of Pleuro, and easily distinguished from other forms of chest complaint.

But I have already taken up too much of your time, that I will now take up the more difficult and not so well known portion of this paper, viz.—inoculation as a preventive. Let me here state that the treatment of this complaint is out of our reach, both from the fact of our inability to deal with it successfully, and also because the laws of this country demand that every animal affected with Pleuro shall be destroyed, with the evident intention of trying to eradicate a disease that is not of spontaneous origin, and our next consideration is how we may best get quit of such a scourge among our cattle, causing annually such a fearful loss to the country; and it is my purpose in the meantime to bring under your notice inoculation as a preventive, and one of the *measures* advocated as a means of overcoming this scourge. It is nothing new—inoculation of cattle as a preventive and palliative of Pleuro-pneumonia; for the last 30 years and more it has been tried on the Continent, in Australia, and in our own country, but the conflicting opinions as to its results, have placed us in the unenviable position of being almost

unable to give any opinion on the subject; and, gentlemen, my own experience of it is so limited that I am afraid I will be unable to contribute very much to the subject. But as I have had one or two opportunities of seeing it tried during the last six months, under circumstances which I considered favourable for a trial, in my own practice, and when I could watch the results, I was of opinion that I could not do better than lay the result of that trial before you in as clear a manner as I can; and I will endeavour to give you the simple facts as they occurred, and leave you to draw your own conclusions. On the 15th of July last I was asked to go to Lochside, a farm in the Stewartry of Kirkcudbright, to see a cow said to have been unwell for a day or two. When I saw her I came to the conclusion that she had caught cold, and, further, I formed the opinion that she was suffering from Tuberculous inflammation of the lung. I prescribed for her, had mustard applied to the sides, etc., and the next day had a message from the farmer that the cow was rather better, and he would let me know if she did not continue to improve. On the second day after that I got a message that the cow was not improving, and on seeing her I became suspicious of Pleuro. I questioned the owner, who declared that she had been rather delicate for a long time, and had been troubled with a cough. I was satisfied she could not recover, and asked to have a message sent me when she died, which took place in two days. Being from home, my assistant made a post-mortem, and brought me a section of the lung, when I was convinced it was a case of Pleuro-pneumonia epizootica. I explained the position of matters to the owner, and waited for other cases, which took place in about ten days from the first. Let me explain why I am going into all this detail. It is for the purpose of showing you that the disease in this case was progressing in the usual slow and insidious manner, one after another animal being taken ill; and I am anxious for you to keep this in view, so as to compare it with the effects of inoculation. The Local Authority for the county resolved to have inoculation tried, and Mr. Rutherford, of Edinburgh, as its strongest advocate at the present time, was asked to inoculate the whole of the cattle that had been exposed to the contagion. Up to the time of Mr. Rutherford's visit one animal had died, and one diseased animal had been killed by instructions of the Local Authority; and on the day the inoculation took place two cows and one calf were affected, the cows being all mixed up—I mean the healthy and diseased ones—in their different stalls and in two byres. The calves were going loose in one lot, and one of them was decidedly affected, and destroyed. The two diseased cows were also killed, and the virus taken from one of them. Nine cows and eleven calves were operated upon, and after taking the temperature of each, so as to insure that none of them were suffering from Pleuro—and I may here state that two of the calves had a temperature of 103½, and the whole of them a cough—they were inoculated on the dense portion of skin on the under part of the tail, about three or four inches from its tip. As before stated, one of the diseased cows was killed for the purpose of procuring the virus; and in this, great care must be exercised, so that nothing but the pure lymph be taken. You will find portions of the lung where the disease is not so far advanced filled with clear exudation. Cut into that part, and tear the infiltrated tissue with the fingers, when plenty of the virus can be obtained, and may be retained in a plate. Mr. Rutherford's plan consists of saturating pieces of white woollen threads about five or six inches long in the virus, and after making two incisions with a pair of rowelling scissors on the under portion of the tail, about two inches apart, a curved needle, with a hole in the point, is passed from the one incision to the other; one of the saturated threads is passed through the hole, and drawn into the tail under the skin, where it is left, the ends being cut off. I may here explain that Mr. Rutherford was very particular that none of the animals had

any bruise or wound upon them; but on marking one of the calves with my knife, so as to know it from the others, instead of only cutting the hair, I purposely cut well through the skin until it bled freely, and I did not notice anything particular about it afterwards.

This constitutes the whole operation. It may also be done by hypodermic syringe. The animal may be inoculated in either way. Its performance being very simple, Mr. Rutherford says that one of the chief reasons of the non-success of inoculation in the past with some practitioners who have tried it is its not having been properly done. But, in my opinion, the veterinary surgeon who cannot inoculate, either with the soposotomy or by hypodermic syringe, after once seeing it done, is quite incapable of conducting a successful veterinary practice. After the animals were inoculated, they were kept in the house for about five weeks, with the temperature kept as even as possible, and clear of currents of air, and they were liberally fed on green food. On the fifth day after inoculation I examined the cattle. The temperature of the cows ranged from 101¾ to 101½, and the pulse from 80 to 90. Three or four of the cows had a cough, but otherwise looked all right, and were feeding well, and the milk improving in quantity. The calves also appeared to be going on all right. On the ninth day after, I again saw them along with Mr. Rutherford, the whole of the animals looking well. I took the temperature of the two calves— that was 103½ on the day they were inoculated—and found them 102⅝. Mr. Rutherford declared the operation had been successful, and the whole of them continued to feed well and improve in condition. The parts where the operation had been performed were swollen and thickened, and I noticed a considerable quantity of exudate on some of them, from which, Mr. Rutherford declared, others might be successfully inoculated. Two of the tails had to be amputated about twelve inches from the tip in consequence of the amount of exudation and swelling. To all appearance the whole of the cattle were in good health. I may just state that most of the cows, and nearly the whole of the calves, had a cough of a bronchial character when inoculated, which continued for some time, but gradually left, and up to the present time the whole of the animals are doing well, and not another case of Pleuro among them; and I may mention that the same results were obtained on two other farms within eight or ten miles under almost the same conditions.

That, gentlemen, is the result of inoculation in the cases I have described. But we have to consider what is its value as a means of eradicating the disease. It is not sufficient, from a practical point of view, that individual animals may obtain immunity through inoculation; we must also be satisfied that the inoculated animal cannot be another centre of contagion and a fresh means of spreading the disease. That inoculation does not produce the disease in the lung is certain, and that, when successfully performed, it arrests the spread of Pleuro among the herd that has been exposed to contagion is, in my opinion, beyond a doubt, not through producing the disease in a mild form, but by producing it in a part where there is less scope for its extension than in the lungs. The dense tissue on the tail is not so easily engorged with the exudate material, and there is neither the scope for the extensive lesions that take place in the lung, completely destroying its functions and poisoning the whole system, nor the situation where vital results are so apt to follow. The tail may occasionally slough and have to be amputated, in consequence of the pathological effects of the inoculation; but while a cow may be useful without a tail, she cannot get on without lungs. Let me observe that, on making a close examination of the tails of inoculated cattle, the exudate and general appearance of the parts bear a striking resemblance to the effusion that takes place in the chest; and it strikes me as not unlikely that, as I have already indicated, the malady, through the introduction of the virus, becomes transferred to the

tail. If, then, as has been admitted by Mr. Rutherford, the exudate material from the tail (the product of inoculation) can produce the same results as the virus from the lung of a diseased animal, it raises the question, whether it can also communicate the disease through the ordinary way to healthy cattle?

It appears that this peculiar disease is a local one and can be localised, and the ordinary point of attack in the regular disease is the bronchial tubes.

Yeo says:—"I have never examined a lung affected with Pleuro-pneumonia, in which there was not a well marked and characteristic lesion of the bronchial tubes of the part most severely affected. No matter how small the focus of disease in the lung may be, or how little advanced a stage these morbid changes may have reached, there is always definite disease in the corresponding bronchus, extending some distance along the tube, but more or less localised to the diseased neighbourhood." He thinks it is clear that the disease has its starting point in the bronchial portion of the lungs, and I am strongly of the same opinion.

The cough I mentioned at the outset of this paper, being in existence long before any other of the ordinary symptoms are developed, the bronchial character of the cough, as distinguished from it in the after stages, when the pleuro becomes affected, all indicate the point of first attack, in the ordinary disease, and go far to prove that the pleuro is only implicated in consequence of its close connection with the lung. It is clear that the symptoms of pleurisy are never seen in the first stages of the disease, but only after many of the other symptoms are developed.

All this then shows that the inhaled germ, acting upon the mucous lining of the bronchial air passages, produces the disease in the lung, with all its accompanying results, in the same way that the virus, coming in contact with the cellular tissue of the tail, produces the effects in that quarter, and also in the same way when the virus from the diseased lung is introduced into the cellular tissue in the dewlap or neck, the products are poured into the tissues in the immediate region, and in none of the latter cases does the effects show themselves in the lung-tissue or pleuro. What then is to prevent the germs from the tails of animals under inoculation in a dry state, either to be inhaled by other animals, if the opportunity occurs, or to be retained in the buildings where the animals have been, and through imperfect disinfecting become as strong a centre of contagion as the disease itself. The great difficulty in connection with inoculation is to know how long a time must elapse before the inoculated animals can, with safety, be allowed to mix with others that have never had the disease, without the risk of a fresh outbreak.

Professor Law says, in his views on inoculation:—"The liquids inoculated are the virulent products of the lung plague, and as they do not induce disease of the lungs, but only of the tissues where they are inserted, it cannot be supposed that they exert any influence on the economy through any direct action on the normal seat of the disease. If protective at all, it must be by reason of the reproduction of the germs in the blood or in the seat of inoculation. If in the blood, there must be danger of their being given off by the various free surfaces. If only in the seat of inoculation, viz., the tail, there is still the risk of germs escaping from the wound drying up and being inhaled by other cattle with fatal results." He, however, admits that the risk is less from the inoculated wounds than from the breath of the diseased cattle, but says, "yet even from the inoculated wound the disease has been conveyed," and quotes where Reynal mentions the case of an inoculated Brittany cow at the Alfort Veterinary School which infected two others standing with her, and continues, "I have now under observation a stable in which the lung plague is alleged to have been introduced through the inoculation of the cows four months ago," and further states that no county

has ever succeeded in exterminating the plague by practising inoculation. Perhaps you will permit me to read to you a letter of this month's date on the subject from Prof. Brown, of the Agricultural Department:—

"SIR,—I shall feel obliged if you will kindly insert in your next issue some correspondence I have had with Professor Brown, of the Agricultural Department of the Privy Council. His valuable opinion may prove useful at present time.—I am, &c., MARK J. STEWART.

"*(Copy)*

"Southwick, Dumfries.

"DEAR SIR,—You may recollect a conversation I had with you and Mr. Lennox Peel, C.B., at the Agricultural Department of the Privy Council last August, on the inoculation of cattle for prevention of Pleuro-pneumonia. I understood from you, that while the operation did undoubtedly stay the disease, there is danger that inoculated animals may and do give the contagion to those that are clean, and consequently no large herd of inoculated cattle can ever be pronounced absolutely free from Pleuro. In Australia I am informed that whole herds are regularly inoculated but are never absolutely clean; that in those herds every now and then outbreaks of disease occur, with a probable loss of two or three per cent. at most, whereas herds that have never been inoculated are absolutely clean, but when disease appears, their loss from Pleuro varies from fifty to seventy-five per cent.

"In this county (Stewartry of Kirkcudbright) we have had recently several outbreaks of Pleuro, and the question now is whether, seeing the disease has been apparently stayed by inoculation, those cattle which have been in contact with diseased animals and have been inoculated, should be permitted to breed, and their offspring sold without danger to the healthy stocks of the country. I understand that the practice in the United States of America is to inoculate their cattle when disease is present, but on no account to breed from them or sell them, except to be sent direct to the shambles. I shall feel greatly obliged to have your valuable opinion on this important matter, which with your permission I will publish.—Believe me, yours very faithfully, "MARK J. STEWART.

"October 3rd, 1886.

"Professor Brown, Agricultural Department of Privy Council."

"*(Copy)*

"Agricultural Department, Privy Council Office,
"October 5th, 1886.

"DEAR SIR,—The facts in respect to inoculation are—(1) A certain amount of protection against the natural disease is conferred for a length of time not determined. (2) Inoculation does not produce the disease (Pleuro-pneumonia) either in the inoculated animal or its offspring. (3) Inoculated cattle (otherwise healthy) cannot communicate the disease to other cattle with which they may come in contact. (4) When inoculation is practised in a herd in which Pleuro-pneumonia has appeared, it is quite certain that among the inoculated cattle which are presumed to be healthy at the time, a certain proportion—sometimes a large proportion—are already the subjects of Pleuro-pneumonia in a limited area of the lungs, the disease not being discoverable without a *post mortem* examination.

"These are the animals which are likely to communicate the disease, not because they are inoculated, but for the more evident reason that they are actually affected with Pleuro-pneumonia in an obscure form, which is not modified by inoculation.

"With the above facts before us we cannot doubt that if inoculation is practised at all as an alternative to slaughter in the case of cattle which have

been exposed to the contagion of Pleuro-pneumonia, but are not discoverably affected, the inoculated cattle should be kept in the infected place until they are in a condition for the butcher; and the infected place should not be declared free while any of the inoculated cattle remain alive.

"I may, in conclusion, remark that if the stamping-out system be adopted as the easiest way of getting rid of Pleuro-pneumonia and other contagious diseases, there will be neither occasion nor necessity for the practice of inoculation.—Yours very truly, "E. T. BROWN.

"Mark J. Stewart, Esq., M.P."

(*To be continued.*)

ROYAL (DICK) VETERINARY COLLEGE.

(*Continued from page* 457, *vol. xxiii.*)

Even the destruction of life, unattractive though the subject be, has sometimes its ludicrous and its beneficent aspects. Thus, some years ago, a horse-slaughterer in this city had occasion to attend a funeral, and in his absence a horse was brought to his establishment for slaughter. The assistant essayed, with the aid of a blunt axe, to perform the office of his superior, but failed, and about three o'clock p.m., he rushed to the house of the slaughterer, and, finding him at home, explained: "Shift your claes quick, Geordie; shift your claes quick! Kill't a horse at ane o'clock, and he's no' de'd yet!" The late Professor Spooner used to relate an instance where a horse-slaughterer was ordered to pole-axe a horse that was suffering from lock-jaw; but the aim being bad, the blow fell on the side of the head, with the result that the shock cured the disease, and the horse lived for some years after.

Severance of the spinal cord by pithing is practised to the greatest extent in some of the large slaughtering-establishments of America, and if quickly and expertly done it is very effectual. The only objection that can properly be urged against its adoption is the preliminary pain produced by the passage of the knife through the skin, and also, very momentarily, when it penetrates the spinal cord. In the killing of sheep the operation is practised from before backwards, simultaneously with the act of severing the carotid arteries (bleeding); here also there is pain produced in cutting through the skin and tissues before the cord is severed, as no preliminary unconsciousness is produced by concussion of the brain with a hammer or other similar instrument.

Decapitation, as practised in Edinburgh, in the case of calves; in India, by certain religious sects, in the case of cattle; and, universally, in the case of such small creatures as poultry; by the aid of the chopper or the knife, and in some cases by the guillotine or sword, is, to all intents and purposes, identical with pithing, but preferable to it, inasmuch as no conscious preliminary pain is caused by cutting through the skin and tissues. It is equally as merciful as death by gunshot, though, perhaps, a little more repulsive. In Edinburgh, the decapitation of sheep, in view of the prevailing fashion of leaving the head attached to the carcase, might be objected to, but in my opinion, the absence of the head, so far as appearance is concerned, is a distinct gain, for it is, in the vast majority of instances, both dirty and ghastly.

Cardiac death is seldom resorted to for domestic purposes, as the heart cannot be penetrated without damaging the skin or hide, while the insufflation of air into the jugular vein is a difficult operation to perform—in fact, can only be accomplished by an expert.

Pulmonary death is only practised, in the form of drowning, in the case of small animals, and by the use of such agents as those previously mentioned. If respiratory arrest is brought about instantaneously, it is as merciful a form of death as any which can be inflicted; but if it is brought about slowly, there must be, and always is—as all those who have been at any time partially suffocated can testify—a certain amount of suffering and horror attending the process; and many agents which produce death by respiratory

paralysis give rise to a stage, more or less prolonged, of excitement and delirium. Drowning is objected to by many people, but I fancy, in most instances, horror of the process has been engendered by the objector having, at some time or other, seen the operation improperly performed. If it is carried out in a proper manner, there are few more painless deaths than that of drowning, and here I am speaking from personal experience when I say *there is no pain*, except that mental pain which comes from the vivid realisation of the fact that all which is dear to the victim is suddenly wrenched from his grasp—parents and relations, regrets for the past, and all the hopes for the future, snatched away in a moment. Now, in animals, there is not likely to be any thought of father or mother, brother or sister, the past or the future, at such a moment as this; and, unlike man, an animal does not realise the fact that an end is about to be put to its existence, and, consequently, it suffers no mental anxiety in the thought of what is before it. Moreover, when drowning is carried out in the manner it is done in this city, the sudden immersion acts, in my opinion, like a shock, and prevents the animal realising what is going on. In any case, death is consummated in a few seconds, and any subsequent movements are merely automatic. The waters of Lethe have not, even in these degenerate days, lost their fabled power, and lovers of animals can keep their minds at ease, in reference to the absence of pain attendant upon this mode of producing death, if it is properly performed. Much has been said and written on the benefits to be derived from the use of the lethal chamber, as a painless destructive medium. Undoubtedly, this method of depriving animals of life appeals, with an intensity not felt in connection with any other mode, to all the best instincts of humanity, and if properly and scientifically carried out, it is a most desirable method of taking away life; but while I admit this, and while we show our appreciation of the method here by having a lethal chamber constructed on the premises, I must at the same time express my firm conviction that, with the exception of the absence of that shock to the humane instinct which all forms of violence inflicted on animals produce, death by exposure to soporific fumes is in no way superior or preferable to death by decapitation or shooting.

Chloroform has the great disadvantage of producing a preliminary stage of excitement and distresss prior to the exercising of its narcotising influence, which is sometimes very prolonged and very violent; and, although the action of prussic acid is extremely rapid—momentary, it may be said—the spasms it produces are not pleasant to witness, and, unless administered by qualified persons, unexpected and undesirable results sometimes follow its administration.

Morphia is too uncertain in its action to render it a desirable agent for the purpose in question.

The killing of animals by depletion of blood is a very old method, and, independently of the beneficial influence exerted by its operation on the flesh, it is a comparatively painless one, the only sense of pain produced being in the preliminary step of cutting through the skin. In making this statement I am not speaking "off book," as I well remember an old domestic servant of my family relating, many years ago, her experience of a very near escape from death by bleeding, in the days when periodical venesection was in vogue.

In concluding this address, I wish to say one special word to those amongst you who are students of veterinary science, and that is to express the hope that, in your future life, you will do all in your power not only to relieve the sufferings of those animals which are placed under your charge, but to suppress all forms of cruelty to the members of a creation lower only than yourselves in not possessing some of the higher attributes of man's God-like nature; but while I say this, I must at the same time distinctly say that,

much as I love animals, I have no sympathy with that morbid (am I wrong in saying immoral?) sentimentality which leads some people to speak of animals as *our domestic fellow creatures*, which leads others to declare *that they could have better spared some of their friends than their dog*, or *that they hope to meet their departed canine friend in heaven*, and, worse than all, which leads some ladies to hand over their little ones to the care of the hireling and the stranger, in order that they may pay more attention to their canine pets. It was a beautiful sentiment which was expressed by one of our poets (Cowper, I think) when he said:—

> The snail that in the public path at even crawls,
> An inadvertent step may crush;
> But he who hath humanity—forewarned—
> Will step aside and let the reptile live.

Beautiful, indeed, in itself is the sentiment embodied in these lines, but the poet, to be consistent, should have followed it out to its legitimate conclusion by saying:—

> The wasp that publicly doth buzz and sting,
> May inadvertently be caught and killed;
> But he, who to dumb creatures kindly is inclined,
> Will graciously forbear—and let the insect cling.

I fancy I can hear you say that the cases are not parallel, but how do you know that the snail which crosses the public path is not diligently hieing its way to your garden, with the object of devouring your cherished dahlias, or of demolishing your choicest cauliflower plants? In reference to the relative positions occupied in the scale of creation by man and animals, allow me to quote some lines which you will find in my introductory address of 1874, and to supplement them by a few of more recent date—

> In His own image He created him;
> But dog, nor horse, nor ox were in His image built,
> (Call them thy fellow creatures as thou wilt);
> And with wisdom, understanding, knowledge,
> Power, and might, did him endow;
> And, in order that his likeness might not be defiled,
> *Reason*, in her high empire, was enthroned,
> And *thought* established in the mind of man.
> Yes! these Godly attributes to him were given,
> That he might carry out the predetermined counsel
> Of that Being, of whom, in spirit, he was the image and reflection;
> And though, as all must own, the animal creation
> Is endowed with powers, both of reasoning and of instinct,
> These principles to it were only given that it might, all the more,
> Contribute to the enjoyment, well-being, and support
> Of him who over it was born to reign.
>
> True instinct, reason, thought, nobility—
> The attributes and high prerogatives of God—
> To him alone were given, that man should be
> In all things like unto Himself.
>
> I reck not of that heaven where the dog doth sit
> With men and angels pure, at God's right hand;
> Nor do I find it stated so in Holy Writ,
> Which plainly doth describe that better land.
> No! give to dogs their due, and ever speak them kind,
> But raise them not to level with the blessed;
> Relieve their sufferings, help the lame and blind,
> And never let their bodies be by pain oppressed.
> And when their race is run, and life departs,
> Remember, thou, that they thy charity do claim,
> And, aye, within thy heart of hearts let burn,
> For all thy canine friends, love's purest flame.

Bailie CRANSTON, who had taken the chair in the course of the address, spoke of the able lecture which Principal Walley had delivered, and made some remarks on the improvements which had taken place in the buildings.

Bailie TURNBULL expressed the great satisfaction which the magistrates and Council had in seeing the great step in advance which had been taken by the College. He made a contrast between what the college was when he was boy, and congratulated the Principal and the lecturers on the premises they now had at their disposal. He had no doubt they would show good results in their teaching from these advantages.

Dr. MACFARLANE, one of the lecturers, asked the students to express cordially their thanks to Bailie Cranston for presiding towards the close of the meeting. They, as lecturers and students, were generally inclined to regard Principal Walley as their head, but in some respects they must call Bailie Cranston their honorary Principal. (Laughter and cheers.)

Councillor MACDOUGALD seconded the motion, which was adopted.

Principal WALLEY proposed a vote of thanks to Mr. Morham, and all those who had to do with the reconstruction of the building, after which the proceedings terminated.

THE NEW VETERINARY COLLEGE, EDINBURGH.

THIS college commenced its winter session on the 27th October.

Lord Arthur Cecil occupied the chair, and there was a large attendance of friends and students, amongst those present being Messrs. Greaves, Woods, Whittle, Borthwick, Cunningham, Rutherford, Aitken, Hutton, Boyd, Thompson, Phelp, Clarke, Campbell, Briggs, Burnett, Paterson, Spreull, Reid, Storie, Connochie; Professor Wallace (Edin. University), S. Wallace, Rev. J. Overend, many ladies, and others interested in the institution.

Lord ARTHUR CECIL, in introducing Dr. Hunter, who delivered the opening address, spoke of the difficulty in diagnosis of disease by veterinarians, of the great increase in the number of students, and the increased accommodation now provided for dissecting-rooms.

Dr. HUNTER then delivered the following address:—

MY LORD, LADIES, AND GENTLEMEN,—In giving the introductory lecture on this occasion, it becomes my pleasant duty to welcome alike those students who are now returning to their studies for another session and those who are here for the first time, and also to thank those of you—practitioners and others—who have come, some of you a considerable distance, to honour us with your presence. In choosing a subject for my discourse, I have, according to precedent, fixed upon one of present interest to the profession, I mean of more than general interest, and such a subject as is likely to lead to considerable difference of opinion; but from the intricacies involved, from my inability to give, perhaps, anything like explicit views in so short time, and from many of you having not as yet come to relish the dry technicalities to which I may feel myself obliged to refer, I only hope I may not fail altogether in interesting a sufficient number of you.

The subject is "Vaccination for the Prevention or Cure of Disease," and I trust you will bear with me while, for the sake of those as yet new to the whole science of medicine, I think it necessary to begin at the very beginning. That I may be the better able to keep myself in sequence, I propose to divide the subject into four heads.

1st. What is disease?

2nd. What class of diseases are likely to be affected by vaccination?

3rd. What have been the methods employed?

4th. What are the scientific principles on which the practice of vaccination is based?

As you are all perhaps aware, the framing of a definition is no easy matter, even when we imagine we know all about the matter to be defined.

The most famous law-makers have not always been able to get over this difficulty. In the case of disease, then—at best but partly understood—how are we to give definitions? If I tell you that in health the sum of the entire functions of the organism seems an unbroken harmony, that the various organs and minute parts of which the so-called organs consist, are working, as to time and quantity, exactly to each other's hands, so to speak—that no single cell is doing more nor less than its neighbours require of it—and that all this harmony of parts for the common good is most closely related to, and dependent upon, the nourishment of each individually; then you will see that when I say "health is normal nutrition, and that disease is abnormal or altered nutrition," I do not fall very far short of giving what will serve at least our purpose as a definition of these common but perplexing terms. Having, then, got so far, in what class of these altered states known as disease are we to expect beneficial results from the form of treatment known as vaccination (using the word in its widest sense)?

Most of you know that many of the so-called diseases appear to be due entirely to what we call physiological causes, *i.e.*, there is some obstruction in a vessel, let us say—temporary, perhaps—some valve not acting properly, from loss of substance, etc., or some organ entirely destroyed from mechanical injury or otherwise; in all of these cases common-sense telling us it would be utterly hopeless to expect benefit from any form of vaccination. Whether in the simple form of mere "derangement," or the more serious form of "organic disease," all such cases we should place entirely beyond the reach of benefit from vaccination. It is to the class of diseases depending upon some specific "*virus*" we must look, where some peculiar organic, or possibly rather organised poison, which upon its introduction into the system produces the series of changes peculiar to itself; in this sense such diseases will be all more or less contagious or infectious. First from experience, in some cases reaching to the remotest antiquity, and afterwards from direct scientific deductions, we look upon such diseases as just those for which this ever-extending method of treatment is peculiarly and exclusively suited.

I said I should use the term "vaccination" in its widest sense, but as it is more difficult grasping general principles than following special cases, I shall preface what can be said for the vaccination principle by running over, so far as time will permit, the history of the best authenticated and most universal of the methods of applying this mode of treatment. In doing so, I shall, for evident reasons, limit the reference to methods of procedure (the matter of our third head) to the single disease known as Smallpox in man, and the modified forms under which it occurs in certain of the lower animals. Although now clearly explained up to a certain point by the light of modern science, we need not be told that the very method we now employ was the result of simple experience, and, in certain applications of it, of very great antiquity indeed. Like most of the older modes of treatment, it owed its origin to no theory, unless we choose to see it in perhaps the application of a widespread but erroneous notion, not entirely decayed even yet, that no two serious diseases can exist at one and the same time in the body; and that by the introduction of some less deadly evil the powers of the particular disease already in possession should be gradually weakened, and perhaps entirely extinguished, indeed, so far extinguished, that never afterwards should it be able to gain a footing. Can such notions have led the early surgeons to resort to blistering as a means of relieving more serious internal

irritations? And are not such phrases as the following still in use in Lowland Scotland in application to similar cases, "Mak ae deil ding another," "Cured by a hair o' the dog that bit him," etc., just the remnant of similar ideas? Whether the primitive idea was that one disease could cure or give immunity from future attacks of another disease; whether there required to be a certain similarity between these two diseases, as poetically expressed by Byron, "One fire burns out another's burning;" or whether there were embryo homœopaths in those days who thought as some are still contented to do, that the production of a particular class of symptoms will afford relief and perhaps prevent recurrence where a disease exists having similar symptoms. On these points we shall ever remain in ignorance, for the ancient medical writers are silent on this matter. Indeed, we may assume for certain that vaccination was first practised (and it has been practised from time immemorial) quite irrespective of any theory, the fact being that until comparatively recently the class who should have been given to theorise about it, the medical practitioners, held aloof from it altogether.

To be more particular, inoculation for prevention of Smallpox, or intentional contagion from a mild case with the view of preventing a severe attack ever afterwards, is mentioned by no regular medical writer, nor even taken notice of by travellers or historians, before the beginning of the eighteenth century. We depend for our information on tradition. In Turkey it seems to have been long practised, for the purpose apparently of keeping up an adequate supply of marketable girls without disfigurement from Smallpox.

Two Italian writers, Pylarini and Timoni, were the first to draw the attention of the learned world to the practice, in a paper to the Royal Society of London in 1701. Dr. Williams, of Haverfordwest, next drew attention to the mode of procedure in Wales, where, as in the Highlands of Scotland, what was called "Buying the Smallpox" had long been practised. This was either by putting the recipient to bed with a mild case, tying woollen threads round the wrists after having been drawn through Smallpox pustules, or the actual scarification of some part of the skin and the introduction of Smallpox matter, just such practice as was afterwards introduced from the East. (It is curious that the term "buying the Smallpox" has its equivalent in most languages where this was practised).

In 1717 Lady May Montague had her son so inoculated in Constantinople, her daughter being similarly treated when she came to England in 1721, at which time seven condemned criminals were also successfully operated upon. Soon afterwards the Royal family and several of the nobility subjected themselves to the same process, and inoculation rapidly spread over civilised Europe. Although an immense gain, inoculation was not without considerable risks, as the transplanted disease could not always be got to preserve a mild form, and now and again fatal cases occurred.

We come now to the new departure, the principle of which has guided all subsequent practice in such cases. This was in 1796, when Dr. Jenner made his discovery, which was given to the world in 1798, at first to meet with very considerable opposition even from his professional brethren, and not yet without its opponents. Long before this a disease very like Smallpox occasionally was prevalent among cattle, and a very severe epizootic of this nature had raged in England between 1745 and 1780. Jenner saw the remnant of it in 1796.

Dr. Layard had then found that inoculation from cow to cow (choosing mild cases), just as Simonds, of the London Veterinary College, found in 1862, had the effect of saving many cattle. It remained for Jenner to try the effect of Cow-pox matter on man as a preventive for Smallpox, and although he seems to have thought Cow-pox a different disease from Smallpox, just

as he thought the so-called "grease" from the horse's heel another matter, while he found Smallpox to be very much modified by either of them, his discovery ought not to be underrated.

This horse "grease" we now know to be accidentally combined in certain cases with equine-pox matter, and that Small-pox, Cow-pox, and Horse-pox are not different diseases, but modified forms of one and the same. Were this not the case, vaccination with the one would be as powerless to prevent the one as the other as vaccination with Pleuro-pneumonia would prevent Small-pox or any other contagious disease. Here, then, is the principle: the cow's constitution, let us say, so far modifies the Small-pox of man (and there is no longer any doubt that the cow can take Small-pox from man), that a much milder form is produced, which, by reintroduction to the human body, gives rise to a disease no longer like the virulent affection of Small-pox, but resembling the mild form known as Cow-pox. The same may be done from the horse to man, or through the cow intermediately.

Instead, therefore, of looking about for a mild case in the same species, we see in what other species a milder form of the same disease normally occurs, and take our matter from the latter source. (Not that there are no exceptions, for there have been instances where Small-pox, got even through the cow, has proved fatal.) In this lies all the difference between "inoculation" and "vaccination" in their restricted meanings.

Even yet, however, we practise inoculation from the same species as in Pleuro-pneumonia, and in what is called "ovination," which is inoculation of a sheep with the Sheep-pox matter from another, and in other instances also, until we discover some other source from which the modified virus may be taken.

To hurry to a close, I shall try to give you now the scientific principles to which I alluded in my last head. And you will find, gentlemen, that, so far as strictly scientific reasons are concerned, there are but few. I find I cannot proceed very far, however, without saying a little about what forms a pretty general topic in modern professional conversation and writing—disease germs. These germs, which are all minute bodies, most probably belonging to the class of microscopic algæ, or possibly fungi, are the microbes or micro-organisms of the modern pathologist, which he supposes are the direct cause of most, and possibly all, contagious and infectious diseases. To hope to give you anything like a sketch of these potent pigmies in our limited time were futile; their names even are now almost legion. I cannot descend to detail, and give all the structural differences between *bacteria*, *bacilli*, and *micrococci*, nor is that at present necessary. Suffice it that mere shape seems to have little to do with their properties, for there are both harmless and pathogenetic forms to be found in all the groups, many organisms presumably different, and with very different properties indeed, being exactly alike, so far as the best microscopes can show. But it is just here that many interesting considerations come in; for instance, taking the case of the common hay bacillus (*Bacillus subtilis*), so very like the deadly Anthrax bacillus (*Bacillus anthracis*), that careful measurements even fail to show much difference, may it not be possible that, after all, they are one and the same organism, the morbific form having acquired its new and incontestably virulent properties, as seen in Woolsorters' Disease, by having had its nutrition altered in the body of cattle, just conversely as the Small-pox germ is altered to a milder type in changing its host from man to the cow?

The modern methods of "cultivation," to secure a modified and weaker virus, all depend on this affair of "nutrition;" and we stated at starting how important a part nutrition played in health and disease.

Then, again, another and a great perplexity is what is called the "polymorphism" of these microscopic organisms, whereby the same germ may

appear under quite a Protean variety of shapes, so that we are often uncertain whether we are looking at a new organism or some one we knew only in another of its shapes. Rash observers and dogmatisers get into endless trouble on this score.

This change of shape, under varied conditions, is not to be altogether wondered at when we see larger and easier-studied organisms showing the same properties. For instance, the *Æcidium berberidis*, the mould of the common barberry, although very different in form, is now proved to be the same plant as the *Puccinia graminis*, one of our worst wheat blights. The illiterate always thought so, but scientists have only recently come to that conclusion.

With these germs, then, making up for their minuteness by their almost infinite numbers, and with their almost indestructible powers of vitality, even strong acids having but little effect upon them, floating as they are in myriads in the atmosphere, swarming in almost all natural waters, and scarcely absent from any article of food, with powers of reproduction sufficient to produce many millions from one, is it to be wondered how contagions spread? Is it not more wonderful how there is any escape? The adaptation of the *nidus* seems to be all, and where the tissues of one individual may prove a poor lodging on account of certain imperfectly understood conditions, another individual has its tissues in just the proper condition for being a nursery of germs.

But, lastly, you will no doubt expect me to say why vaccination with a certain germ—say the modified micrococcus of Small-pox—shall give future immunity from the disease. At present this is almost an entire mystery, but for your edification I shall give you three theories. The first is known as the "exhaustion theory," and infers that during the life of the introduced organism it removes all nutriment essential to the subsistence of the same kind of germ, modified or not. The second is called the antidote theory, and at first sight seems more feasible than the former. It implies that the implanted germ in growing produces some chemical substance which acts as a poison to germs of a similar nature ever afterwards—at least for a prolonged period. I shall not attempt to discuss this view, which is at present held by many; but give you the third theory, now associated with the name of Grawitz, which assumes that during the time that the natural elements of the tissues are keeping company with the introduced germ, a new form of vital activity is produced in these elements, whereby they afterwards go on living according to a new method, so to speak, their habits having been so far changed that they no longer can afford a suitable nutriment in which germs of the same order may at any subsequent period thrive, or even continue a bare existence. So much for pure theory, which, after all, helps us but little.

On the other hand, it happens that at present there are diseases known to be modified very much by vaccination, in which no organised germ has been found as yet. Hydrophobia is one of such; and now, certainly, we cannot pass over the splendid results attained by Pasteur in vaccination for this disease. Were I to name one more than another who has done service in the field of modern scientific vaccination, I should mention Pasteur; but there are many other able men who have spent much time and labour in these investigations—names that, with that of Jenner, will go down to posterity as the conservers of life—Delafond, Toussaint, Koch, Klein, and many others, not least among whom is your own Principal, who has done much good work in "cultivation" experiments with germs discovered by himself.

Principal WILLIAMS then proposed a vote of thanks to the noble Chairman, and also one to Dr. Hunter, and, in the course of his remarks, referred to the good done in the neighbourhood by inoculation as a preventive to Pleuro-pneumonia, and suggested that a large experiment be tried at the public ex-

pense, to prove or disprove its efficacy, and spoke of the great difficulty sometimes experienced in detecting the presence of this disease.

Mr. GREAVES (Manchester) seconded the votes, and said it gave him great pleasure to again be present with Principal Williams at another opening of the college.

ROYAL AGRICULTURAL SOCIETY.

AT the Monthly Council, held on December 8th, Sir John Thorold stated that the Committee had considered several reports from the Society's provincial veterinary surgeons. Mr. Clay had brought before the Committee his scheme for the horse-shoeing competition, and they recommended that £50 be offered at Newcastle for shoeing-smiths, in three classes, as follows:—

Class I.—Agricultural horses, £6, £4, £3, £2, £1.
Class II.—Dray horses, £6, £4, £3, £2, £1.
Class III.—Hunters and Roadsters, £6, £4, £3, £2, £1.

The competition to be confined to the district of the show (Northumberland, Durham, Cumberland, and Westmoreland), and no competitor to enter in more than one class. The Committee had met nine times and made nine reports, and they recommend that the following constitute the Committee for the ensuing year:—Lord Egerton of Tatton, General Viscount Bridport, Lord Moreton, Sir John Thorold, Sir M. W. Ridley, Bart., Hon. E. K. W. Coke, Hon. C. T. Parker, Mr. G. M. Allender, Mr. A. Ashworth, Professor Brown, Mr. C. Clay, Mr. A. C. Cope, Mr. Dent, Dr. Fleming, Mr. S. P. Foster, Mr. Harpley, Colonel Kingscote, Mr. A. P. Lloyd, Mr. A. Pell, Prof. Robertson, Mr. G. H. Sanday, Prof. Simonds, Mr. A. J. Smith, Mr. W. H. Wakefield, and Mr. Jacob Wilson.

This report having been adopted, on the motion of the Chairman, it was decided to make a veterinary grant of £500 for the year 1887, of which sum £200 was granted to the Royal Veterinary College in aid of the further development of cattle pathology.

Army Veterinary Department.

Gazette, December 11th.

Veterinary-Surgeon Fred Smith to be Veterinary-Surgeon, First Class.

Veterinary-Surgeon J. A. Nunn, F.R.C.V.S., has sailed for South Africa, where he is to investigate the nature of the fatal disease, Horse-Sickness, and endeavour to prevent it in the districts where it is most destructive, by protectively inoculating the horses with attenuated or modified virus. Previous to leaving England, he was elected a Fellow of the Royal Geographical Society.

In the Report of the Government of Madras it is mentioned that, in consequence of the great amount of Cattle Disease in that Presidency in 1882, Mr. Mills, A.V.D., was appointed Veterinary Inspector and Instructor of persons for the suppression of these diseases. The appointment was not a permanent one, but it has recently been renewed for two years, in consideration of the excellent work Mr. Mills has achieved.

Mr. J. C. Dwyer has been appointed Assistant-Superintendent of Horse-Breeding Operations in Bengal, *vice* the late Mr. F. Garrett, deceased.

The establishment of veterinary officers in India has been fixed at 48, as follows:—

Bengal Presidency	15
Madras Presidency	7
Bombay Presidency...	6
Reserve	8
Administrative	4
Remount Depôt	2
Horse-breeding Department	4
Reserve for Remount and Horse-breeding purposes ...	2
Total	48

Until the question of a Civil Veterinary Department is finally settled, the veterinary-surgeons employed in Burma, with the Punjab Government, the Lahore, Bombay and Saidapet Veterinary Schools, will be considered extra to the establishment.

We have frequently protested against the insane reductions in the Indian Veterinary Establishment, of which the above is the latest example. As a result, we are beginning to have in the military operations in Burma a repetition of the terrible losses witnessed in Afghanistan. A correspondent of the *Madras Pioneer Mail*, for instance, writes from that country:—"There has been a great mortality here lately among the transport ponies, as many as fifteen dying in one day. In the absence of any qualified veterinary surgeon, no one is prepared to offer an explanation. One peculiarity about it, however, which looks like a contagious or infectious epidemic, is that only the transport animals have suffered which are of necessity kept together, while ponies kept separately, belonging to officers and others, have all escaped. The progress of the disease is extremely rapid, animals seized one day refusing food and often dying within forty-eight to sixty hours, while within a very few hours of seizure the whole appearance of the beast is changed, and it looks emaciated and half-starved. Anthrax might—I speak in ignorance of the symptoms—be suggested as the cause, but some officers acquainted with the appearance of animals which have died from it have held *post-mortems* upon some of the carcases, and pronounced against it. The mortality amongst the goats brought up to the Commissariat for issue to native troops is, I am told, enormous; but this is hardly to be wondered at, seeing that all the steamer-captains complain they are put on board at Mandalay without any fodder for the five days' journey, grain being sent in lieu, which is not of course an efficient substitute. Altogether Bhamo seems to be a bad place for animals, and has not proved much better for human beings, though doubtless, under the altered conditions of airy quarters and good food, the health of the troops will very materially improve in future years. It would be a good thing to send a veterinary surgeon up to Bhamo specially to report on the diseases and preventive measures advisable with reference to the animals. Inspecting Veterinary-Surgeon Shaw came up with Sir Charles Bernard, and spent some three days here, but was not, I believe, consulted about the epidemic amongst the ponies."

Obituary.

DEATH has been busy of late, especially among the older members of the profession; and we regret to have to chronicle this month some of the more prominent among our colleagues who have been taken away from us.

Perhaps the best known of these is H. J. Cartwright, F.R.C.V.S., Wolverhampton, who died on November 30th, after only a few days' illness, the result of a chill. He graduated in 1845, and for many years was a Member

of Council of the Royal College, and also held the office of Vice-President. Quiet and unobtrusive, regular in attendance, and taking great interest in the work of the Council, where his sterling integrity and sound sense were always manifest, Mr. Cartwright was highly esteemed and his opinions justly valued. His presence in the Council will be greatly missed, and his colleagues there cannot but feel deep pain at the loss they have sustained by his decease. Born at Wolverhampton, where he began practice soon after graduation, he continued there up to the time of his death, and for a long time enjoyed the reputation of being one of the most eminent members of the profession in this country, his advice being sought for far and wide, and everywhere he was recognised as a worthy representative of his calling. In his own immediate neighbourhood he was held in much esteem; and a local newspaper, in giving an eulogistic notice of him, remarks that "he was widely known and highly respected; no man could have worked harder; his ability had gained for him one of the highest positions in the profession. . . He was a Churchman, and a staunch Conservative; but being of a very retiring disposition, he never took any part in public life."

In all movements which had the welfare of the veterinary profession for their object he played a prominent, if unassuming, part; and all good and charitable projects received his support. A staunch and true friend, courteous in manner, kindly in speech, careful never to wound the feelings of any one, our deceased colleague made friends everywhere, and rarely indeed an enemy. It may be noted that he died on his sixty-fifth birthday.

M. E. Naylor, F.R.C.V.S., of Wakefield, died on November 21st, aged 83 years. He graduated in 1831, was elected a Fellow of the Royal College in 1877, and was a vice-president for four consecutive years. He was an enthusiast in his profession from his earliest days, and for many years was curator to the Veterinary Museum, subsequently presented by the late Mr. Youatt to University College, London. In this capacity he showed marked ability, and had many opportunities of studying and preparing morbid and other specimens, both as pupil and assistant.

He was the son of the late Rev. M. Josh. Naylor, D.D., vicar of Perristorre and rector of Crofton, near Wakefield. In early life he gave attention to agricultural pursuits; but his great love for domestic animals led him to embrace the veterinary profession. He entered the Dick College in Edinburgh, and speedily won the esteem of the late Professor by his devotion to his studies; but not satisfied with graduating at that Institution, he decided to enter the Royal Veterinary College of London, where he obtained his diploma. At the same time he entered as pupil, and subsequently assistant, to the late William Youatt, by whom he was highly valued for his professional attainments.

After a lapse of time, he decided to commence his professional career in his native town, where he soon formed an extensive practice, which he carried on for more than half-a-century, until about two years ago, when a paralytic attack prostrated him.

Mr. Naylor was highly esteemed not only by his fellow-townsmen, but also by a large circle of friends, both in and out of the profession. He took a lively interest in most of the deserving institutions of Wakefield, and to the School of Art, Mechanics' Institute, the Lancastrian School, the Microscopical and Naturalists' Societies, and to other educational and scientific bodies, he rendered, as a member of their executive, most valuable aid. He was one of the oldest Freemasons in Yorkshire, and was likewise connected with the West Riding Chamber of Agriculture, of which he was one of the founders, and some fifty years ago was V.S. to the Wakefield troop of the S.W.Y. Yeomanry cavalry.

The deceased led a most active life, and possessed a good general knowledge of natural history; and at a scientific conversazione, microscopical soirée, or other exhibition, was seen to great advantage.

In his profession he was universally respected, and in any case of litigation in which he was employed his unswerving character made him an especial favourite. He was a firm supporter of most of the veterinary medical societies; and few men have left a name more highly esteemed, both by rich and poor. To the latter he was always ready to render his professional assistance without fee or reward at all hours. His Christian character was most exemplary, and it may well be said of him, "He rests from his labours, and his works do follow him."

As with Mr. Cartwright, so with Mr. Naylor; the local public press testified to their worth and the loss sustained by their death. Among the many laudatory notices of Mr. Naylor, we may give the following from the *Wakefield Herald*:—

"Once more the mournful words, 'Dust to dust' have been pronounced, and the grave has closed over the form of one who for many years was a familiar figure in our midst. Another of Wakefield's worthies has gone to 'that bourn from whence no traveller returns.' That Mr. Martin Naylor deserved to be accounted such a worthy, those who knew him best can fully testify, and the representative body of mourners who attended his funeral is in itself sufficient evidence of the fact. If the deceased gentleman was not great in the ordinary acceptation of that term, it is because he refused to 'have greatness thrust upon him;' for, while ever ready to render cheerful help to any deserving cause (as the records of our public institutions bear witness), he was always content to occupy a retired position, and was with the utmost difficulty prevailed upon to accept any post of honour sought to be conferred upon him in recognition of his services. This shrinking from conspicuous offices may have deprived him of that loud-voiced popularity which is often bestowed upon less worthy men; but by those with whom he mostly came in contact his sterling qualities were estimated at their true value, and will not soon be forgotten.

"Nor is it, perhaps, in the public walks of life where he will be most missed. Amongst the most sincere of his mourners will be those toward whom his never-failing charity was wont to find its freest exercise—the poor in his immediate neighbourhood. As many a recipient of his kind acts could tell, he was one who did 'good by stealth, and blushed to find it fame.' Not only by direct deeds of charity did his greatness of heart express itself, but also in his professional dealings with the humbler classes, by forgiving them their 'doctor's bills' when he saw that they could ill afford to pay for the advice they had been compelled to seek, and in a variety of other ways. In the case of 'Old Martin Naylor,' as he was colloquially termed, Shakespeare's words, that the good which men do is 'oft interred with their bones,' will assuredly receive no exemplification, for his benevolence and generosity will live in the hearts of the community for many long years."

We regret also to have to announce the death of R. S. Blake, M.R.C.V.S., of Wimborne, Dorset, which took place on 21st November.

Mr. Blake qualified in May, 1849, and for the space of thirty-five years practised in the above town. For the greater portion of the time he was Government Veterinary Inspector. Besides enjoying a high professional reputation, he was a much-respected inhabitant of the neighbourhood.

Another old member has disappeared from among us in the person of G. Langley, M.R.C.V.S., late of Much Wenlock, Salop, who graduated in 1828.

Notes and News.

RANCHE HORSES.—A hundred head of wild horses were being driven into the swift-running but shallow river; the leaders stringing out in all directions, the tail of the herd rushing with headlong speed down the steep, sandy incline of a narrow gorge, urged and directed by the flying horsemen, who had to overcome their natural fear of being bogged down in the treacherous, shifting quicksands of the river-bed. Now they are all safely across. Their coats, still wet, are glistening in the sun; their spare forms, wiry legs, and small, well-shaped feet give promise of activity and endurance; the long, flowing manes and tails, the shaggy forelock and bright eye impart to them a wild, free air, but the straight shoulders and low withers foreshadow an awkward, wearying gait; the narrow chest, and small quarters reveal a want of power, and the receding foreheads and round nostrils denote an uncertain temper. But we must not be too critical. They are young and fresh, and full of fun and frolic. In a few months' time ill-usage and hard work will have reduced them to lean, broken-hearted creatures, without a kick left in them. How strangely marked they are! Piebalds, skewbalds, and duns with striped backs predominate. Here is one with a pure white head, neck, and shoulders, the rest of him coal-black; there is a blue roan with a large white patch on his side; and yet another, a rich dark chestnut has a splendid mane and tail of a much lighter colour. Quite a number of them are wall-eyed, or "glass-eyed," as they are called out West. In height they average from 14 to 15 hands. They are all geldings, four and five-year-olds. Mares are rarely used for working cattle; at certain periods they are seized with a desire for wandering, and scour the plains in search of fitter mates than the geldings with whom their lot is cast. It then becomes almost impossible to restrain them within bounds, and away they go in search of love and adventure. Originally sprung from the Spanish jennet, brought over to the continent of America by the conquerors of Mexico, some of whose steeds escaped, their descendants have ever since wandered across the plains in large droves. In their wild state they are called "mustangs," but when raised on a ranche, and after having been handled to a certain extent, they are called "bronchos."—From the "Cow-boy at Home," in *Cornhill Magazine*.

SCURVY IN SERPENTS.—M. Magitot has recently described to the French Académie des Sciences, a disease he has observed amongst snakes which is analogous to scurvy, there being inflammation of the mouth, abscesses, hæmorrhages, ulceration, shedding of teeth, cutaneous ecchymoses, and inflammation of the cervical glands. The causes seem to be overcrowding, dampness, cold, and bad hygienic conditions. A bacillus, too, has been found, which M. Pasteur looks upon as the morbid agent. Most of the snakes affected with the disease succumb to it; but by timely care and astringent applications to the mucous membrane of the mouth, some may be saved.

DESTRUCTION BY WILD ANIMALS IN MADRAS.—During the quarter ending 30th June, 601 bullocks were reported to have been killed in the Madras Presidency by tigers and cheetahs. Also 731 cows, 190 calves, 181 buffaloes, 126 sheep, 156 goats, 29 horses and ponies, 25 asses, 31 dogs and 9 pigs. About half of this destruction occurred in the South Canara District.

DR. CHAUVEAU.—It gives us much pleasure to announce that Dr. Chauveau has been elected to the Chair of Comparative Pathology in the Museum of Natural History, which was so ably filled by the late M. Bouley, and rendered vacant by his lamented death.

ANIMAL MORTALITY IN FRANCE.—A communication, made by the French Administration to the Conseil de Perfectionnement of the Veterinary Schools, shows the favourable influence which the progress of veterinary medicine and hygiene has had on the life of domestic animals during thirty years—the mortality among horses, cattle, and sheep, having steadily decreased during the periods given :—

	Horses.	Cattle.	Sheep.
Losses in 1852	178,000	292,000	2,561,000
„ „ 1862	132,000	332,000	1,532,000
„ „ 1882	55,000	186,000	874,000

RABIES IN NOTTINGHAM.—Owing to a serious outbreak of Rabies at Nottingham, the Watch Committee of the Town Council have issued stringent orders with regard to the muzzling of dogs. The Committee had before them at their last meeting the testimony of several veterinary surgeons, and of the medical officer of health for the borough, as to the prevalence of Rabies in the town, and it was shown that a horse and a cow, as well as a number of dogs, had been attacked with the disease. The Committee, therefore, decided to avail themselves of the powers conferred upon them by a recent Privy Council order, and have issued regulations ordering the muzzling of all dogs at large for two months. The regulations provide that the muzzle shall be so constructed as to form a complete cage for the snout of the dog, without preventing the animal from breathing freely, or lapping water.

Correspondence.

PROTECTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

SIR,—In your last issue there is a report of a meeting of the Montreal Veterinary Medical Association, at which Professor McEachran, in dealing with Pleuro-pneumonia, takes occasion to refer to inoculation in such terms as we cannot allow to pass unnoticed. He says: "In every country of the world where it has been impartially tried and reported on, that wherever it is practised, it has to be kept; the report has been unfavourable, that many die from the operation itself, that thus in large dairy byres in Scotland, in Edinburgh, and in Glasgow, where the lives of the cattle are protracted by the operation, every fresh animal taken in has to be inoculated, and that hence we have a constant supply of the virus existing and kept active in these centres of disease."

Professor McEachran must pardon us telling him, that in this he makes serious, mischievous, and gross mis-statements. We are sorry to have to write this of our old friend, but on this subject we will mince matters with no man, and we protest, as we have done before, against statements made by people who, from their position give weight to such, while all the time, as in this instance, they can be shown to be utterly erroneous, and founded on an imperfect knowlege of the operation.

Our reply is that:

"Wherever the operation is properly carried out it is an absolute success, and it is not unfavourably reported upon in every country where practised; on the contrary, it is making steady headway, notably in Australia, where only the other day the authorities pronounced unequivocably in its favour.

"*Less than one per cent.* is the average death rate from the operation in our hands, and making every allowance we have no hesitation in saying,

that, where it exceeds five per cent., the fault lies with the operator, not the operation.

"*It is not necessary* to keep it up where once practised, and most certainly such a thing is not carried out, either in Edinburgh or Glasgow, as he affirms.

"His statement that, in inoculating, a supply of the virus is kept up, is somewhat vague, but presuming that he implies that inoculation re-produces, intensifies, and continues the infectious principle, *we flatly contradict him*, and do so upon an experience of the operation which he has no conception of.

"Inoculated animals, healthy at the time the operation is performed, and all animals carefully selected, and remaining the inoculated survivors of an outbreak, *do not*, as a matter of simple fact, *communicate the disease to others;* nor do they contract the disease, if freshly brought in contact with it. They cannot be made to take it. They do not become, nor are they centres of the disease, if originally carefully selected."

We sympathise with Professor McEachran in his anxiety to prevent Pleuro-pneumonia getting a foothold in that part of America which is his by adoption, but we are very much afraid this will not avail much, seeing that it has so strong a foothold in the adjoining states. If the authorities can prevent, or in a reasonable time stamp out the disease by pole-axing, well and good—if not, what then? We are afraid our friend and those who think with him, will have perforce to turn their attention to other methods; and although he indulges in some very tall talk about inoculation being a "cursed" and iniquitous practice, we advise him to try and make himself master of its every feature, when in operation. We think he who can be so, is in a fair way of benefiting the cattle owner of not only America, but of any country where Pleuro-pneumonia may happen to occur. We have such faith in the value of the operation, that we could stake our life upon it, always provided it be carefully and properly carried out; in this lies the danger to its success. It is an absolute success in our hands; why should it not be in those of others? If it succeeds in one outbreak, why should it not in every one, and why, following the same line of reasoning, should it not totally suppress the disease?—Yours faithfully,

Edinburgh, December 7, 1886. R. RUTHERFORD, F.R.C.V.S.

SIR,—In the November issue of the VETERINARY JOURNAL, under the above heading, appears a letter scurrilously attacking me, and, as is usually the case in such letters, the writer's name is concealed by a *nom de plume*.

If I consulted my own feelings, and acted accordingly, I would certainly treat this august individual with silent contempt.

But as a number of my professional friends (possibly, after reading the controversy in *The Kirkcudbright Advertiser*) have advised me to lay the facts of the case plainly before the profession, and let them judge for themselves whether it be possible that these wise men from the East can come out with clean hands, I now venture to do so. I hope it may lie in your power to favour me with space, as it is my intention to be as brief as possible.

On the 7th July last, Chief-constable Davidson called at my house to consult me about reported suspicious cases of Pleuro at Chapelton. My pupil, Mr. Douglas, told him I left home for London the night before, in order to attend a Council meeting. On the following day, Mr. Irvine, the veterinary inspector for the central division of the county, in whose district the outbreak took place, after consulting with Mr. Paterson, Dumfries, declared it Pleuro-pneumonia. The Local Authority held a meeting on the 14th, and ordered the Inspector to telegraph for Professor McCall, who came and

examined the stock at Chapelton on the 15th, and having declared it to be Pleuro, attended a Local Authority meeting the same day. On Professor McCall being asked what suppressive measures he recommended to be adopted, he at once advised "stamping out."

In the meantime Mr. Biggar, the owner of the stock, and himself a member of the Local Authority, was communicating with Mr. Rutherford, Edinburgh, who strongly recommended inoculation; and on the two following days, the 16th and 17th, the animals not slaughtered were inoculated by a veterinary surgeon from Hawick, and visited a week afterwards by Mr. Rutherford. Mr. Biggar, who has all along been an active and influential member of the Local Authority, intimated that he had adopted inoculation experimentally; and so easily was he talked into Mr. Rutherford's views, that in a very few days he went among members of the Local Authority advocating inoculation, and advising its adoption by the Local Authority.

I returned from the South the first week in August, and heard that Mr. Rutherford had been employed by the Local Authority to inoculate cattle at Lochside. All this time I took no notice of either Mr. Biggar's experiment, the action of the Local Authority, or Mr. Rutherford's assertions. But on Monday, the 13th September, I had occasion to go to Castle Douglas professionally, and I found, much to my surprise, I was accosted on every hand by farmers and gentlemen, some of them being members of the Local Authority, asking my opinion regarding inoculation.

On going towards the station, a gentleman farmer came up to me and said, "I hear you have doubts about the efficacy of inoculation as a means of exterminating Pleuro from the county. If such is the case, I hope you will endeavour to attend the first Local Authority's meeting and state your views, as I am afraid the Local Authority is being led away by the dictates of one man and a veterinary surgeon we know nothing about."

This I declined to do, as the outbreak was not in my district; however, I promised to put a short letter in the *Kirkcudbright Advertiser*, which I did. In that letter I did not give an opinion for or against inoculation. I quoted from Dr. Fleming's "Sanitary Science and Police," and from Professor Walley's "Four Bovine Scourges;" also referring to an article written by Mr. Rutherford in the "Transactions of the Highland and Agricultural Society." On the 11th an outbreak took place in my district, on the farm of Torr, which I reported to Inspector Davidson that night, who told me he had orders, in the event of an outbreak, to engage Mr. Rutherford to inoculate all animals that had been in contact with the affected ones, and asked me if I had any objections to meet Mr. Rutherford the following day. I said certainly not, as I knew Mr. Rutherford well. Accordingly they met me; we examined all the cattle on the farm, and then made a *post-mortem* examination of the condemned one. Mr. Rutherford then told me he had the virus with him, and was prepared to inoculate the remaining cattle. I then called the Inspector aside, and told him to do with the affected animals as he thought proper; as for those not affected, they were under my care, and if my client wished them inoculated, I could do so without Mr. Rutherford's assistance. I turned to Mr. Rutherford, and talked the matter quietly over with him; he agreed with me, and, so far as I am concerned, we parted as good friends as when we met. Now came the Local Authority meeting, your anonymous correspondent has attempted to make so much capital out of, in order to blacken me. I do not blush to say that the few sentences, reported by the *Kirkcudbright Advertiser* and copied by your correspondent, are correct extracts from my speech. But take from a speech four-fifths of the matter communicated, and the whole sense may be destroyed. I will not take up space by recapitulating my speech; suffice to say it had the desired effect. A motion was put at a Local Authority meeting that the animals at Torr be

inoculated, and that Mr. Campbell be asked to do so. An amendment, that all animals be slaughtered, as recommended by the inspector, Mr. Campbell, was also put forward. The amendment was carried, and all the animals that had been in contact with the diseased ones were slaughtered the following day.

I have endeavoured to give an honest and true statement as to the cause of the controversy, the result of my standing up in my own defence, when attacked by a professional man acting as an empiric proclaiming his nostrums, and this has brought down upon my shoulders a combination of *Eastern* wisdom in order to injure me. But I tell them I am no coward, although I should be assailed by ordinary Moonlighters, with masked faces, throwing their missiles from obscurity.

Now a few words on the letter written by Mr. Rutherford's disciple, slave, shadow, or whatever you may choose to call him.

The letter opens with misstatements, and ends with sneering advice.

In answer to paragraph II., I have been the servant of the Local Authority for 21 years, so my qualifications are well known to them; and it is no assertion, but a true statement, without boast, when I publicly declare that I am as competent to inoculate as any man in Scotland.

In paragraph III., where the writer says, "When a member of the Local Authority assailed Mr. Rutherford's reputation in disparaging terms, Mr. Campbell opened not his mouth," I will endeavour to prove the contrary by a gentleman who was present at the meeting.

In paragraph IV., I feel highly honoured at seeing my name coupled with that of an ex-President of the Royal College of Veterinary Surgeons (Professor Walley) as being a neophyte.

In answer to the queries, I may state that I was in London when Mr. Manuel and Mr. Rutherford made their advent into the county, and most assuredly I do not grudge them their labour, as I could not really afford to go out of my district and work for their fee.

Judging from the concluding sentences, "I am afraid poor Peter has gone to the bad." Marvelling at his own philosophy, he has ended in the same strain as he began. My good name, which is dear to me, has been attacked by this unknown example of manliness; but it is to be hoped that he will fail in his object.

In conclusion, I decline to entertain his sneering advice. I cannot boast that I am either an orator or an author; but I am a willing student, and as practice makes perfect, I promise you, Mr. Editor, that you may hear more of me than you have hitherto done.

I forward you a copy of the *Kirkcudbright Advertiser*, and if you have space kindly insert "Farmer's" letter, as an analysis of the whole controversy is nearly contained therein, and in better form than I can put it.

THOMAS CAMPBELL, F.R.C.V.S.

VETERINARY SURGEONS IN YEOMANRY CAVALRY.

SIR,—In reference to "Observer's" letter in this month's JOURNAL, regarding qualified veterinary surgeons holding only the rank of farrier-sergeants in some Yeomanry regiments in England, I can quite endorse all that "Observer" has said on the subject, and, further than that, can at least vouch for the truth of it in one regiment in the Northern counties, supposed to be a crack one, and very select. The gentleman in question is a member of the Royal College, has the care of all the horses in the regiment during the annual training, all horses amiss during that time are reported to him, and he has to make his report every morning of all horses sick or unfit for duty; and still, if this gentleman is to be believed, he only ranks as a farrier-

sergeant. He also tells me that his predecessor (an M.R.C.V.S.) tried repeatedly and made many applications to be appointed veterinary surgeon to the regiment in question, but the invariable answer was, "Well, we have never had one appointed, and we don't see why we should appoint one now."

At the same time, if I am rightly informed, this gentleman has done the duties for six or seven years, and no fault found; also, in the returns for this regiment, in the Reserve Force circular, one veterinary surgeon appears. Now, Mr. Editor, what can be done to remedy this? Clearly there is no hope from the rulers of this particular regiment if pressure cannot be brought to bear on them from the Horse Guards' Department; but I believe the colonel can appoint a veterinary surgeon or not, as he thinks proper, irrespective of any one. With regard to the loss of dignity, if there is a remedy, let it be known, as we look up to you in your position to rectify any loss in professional status we may suffer from, more especially in reference to army affairs; and I am sure any advice you may give will be gratefully received by SUTOR.

[The remedy for this state of affairs is in the hands of veterinary surgeons themselves; the Horse Guards or War Office has nothing to do with it. No veterinary surgeon should serve as such in any branch of the army unless he receives commissioned rank. It is entirely unjust and degrading to himself and his profession to ask or expect him to act as a veterinary officer with the grade of non-commissioned officer. If members of the profession will do so, they are highly blameworthy. Colonels of Yeomanry can appoint their officers.—ED. V.J.]

STAINING TISSUES.

SIR,—The following method of staining tissues and cover-glass specimens for micro-organisms of Dr. Löfflers may be of interest to your readers, for although most useful in bacteriological work, it has not so far as is known appeared in any of the English journals. A solution of caustic potash and distilled water is made, of a strength of 1 part to 10,000. To 100 parts of this is added 30 parts of a concentrated solution of methyline blue in absolute alcohol. This mixture can be kept in a well-stoppered bottle for use. A small quantity is poured into a watch-glass through a paper filter when required, and the section of tissue cut with the microtome, or the cover-glass film under examination placed therein; only in the latter case it is better to float the glass on the surface of the liquid. The specimen should be left in the dye for a few minutes, usually three to four being enough. It is then washed in distilled water to remove the superfluous dye—if a section, in a watch-glass; if a cover-glass preparation, by a jet from an ordinary wash bottle. It is next placed in a watch-glass of a solution of acetic acid and distilled water, $\frac{1}{2}$ to 1 per cent., which is prepared beforehand and kept ready for use. Most of the dye will be removed by this; but if not, the section can be passed through a glass of alcohol —methylated spirit answering every purpose. From the spirit it is placed into a watch-glassful of cedar oil and left there, to clear up and become transparent, and then mounted on a glass slide in Canada balsam in the usual manner. A contrast stain can easily be given, if desired, by adding four to five drops of a concentrated alcoholic solution of eosine to a watch-glass of methylated spirit, and placing the section in it for a minute or two after taking it out of the alcohol, and before putting it into the cedar oil. By this process the organisms, if present, will appear of a dark blue, "almost black," against the pink ground of the eosine, but care must be taken with this method not to confuse the cell nuclei, which readily stain by it, with true micro-organisms. With a section of tissue it is always advisable to pass it through alcohol before

clearing up with cedar oil, as on account of the difference of specific gravity of the tissue liquids, the section will spread out flat on the surface of the oil and can easily be transferred by a lifter on to the slide for examination. Some observers recommend clove instead of cedar oil, but nicety is required in its use, as it dissolves all the aniline colours very rapidly, removing them altogether from the tissues.

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Army Veterinary Department.

Paris, 25*th Nov.*, 1886.

THE SCOTTISH VETERINARY SOCIETIES.

THE fifth annual conjoint meeting of the above Societies will be held in the George Hotel, Glasgow, on Friday, January 28th, at 2 p.m. Professor McCall will read a paper on "The Suppression of Contagious Pleuro-pneumonia: Inoculation and Stamping-out." The following gentlemen, amongst others, are expected to take part in the discussion:—Dr. Fleming; Professors Robertson, Brown, Duguid, Williams, Walley; Messrs. Rutherford, Cunningham, Robinson, Thomson, Campbell, etc., etc. All members of the profession interested in the subject are cordially invited to attend. Other particulars and dinner-tickets may be obtained from the Secretary, J. Macqueen, Glasgow Veterinary College.

CORRECTION.

IN Mr. Berne's paper on a case of Hydrothorax in the last number of the JOURNAL, the doses of Ext. belladonna and Ammon. carb. were wrongly given; they should have been ʒj of each, instead of ʒj.

COMMUNICATIONS for which there is not space this month will appear next month.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. A. Nunn, A.V.D., London; R. W. Burke, A.V.D., Cawnpore; Max Kettritz, Gnesen; F. Raymond, A.V.D., Woolwich; C. Cunningham, Slateford; J. Harrison, Warcop; J. Donald, Wigton; E. W. Baker, Wimborne; T. Bowhill, Nebraska, U.S.A.; A. W. Hill, London; H. Sumner, Liverpool; T. Maclay, Petalumna, U.S.A.; Professor Mueller, Berlin; F. Billings, Nebraska; R. H. Ringe, A.V.D., Muttra; C. E. Challinor, Pendlebury; R. Rutherford, Edinburgh; Professor O. Williams, Edinburgh; F. Smith, A.V.D., Aldershot; Professor McQueen, Glasgow; "Sutor"; G. H. R. Wilkins, Lambourne; H. Kidd, Hungerford; Professor Walley, Edinburgh.

BOOKS AND PAMPHLETS: Zehnter Jahresbericht der Königl. Technischen Deputation fur das Veterinärwesen über die Verbreitung austeckender Thierkrankheiten in Preussen; First Annual Report of the State Veterinary Surgeon of Iowa; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire; *A. Baranski*, Geschichte der Thierzucht und Thiermedicin im Alterthum; *W. Haase*, Zur Gesundsheitspflege des Pferdes; *E. Wolff*, Grundlage für die rationelle Füttering des Pferdes.

JOURNALS, ETC.: *Journal of National Agricultural Society of Victoria; Echo Vétérinaire; Quarterly Journal of Veterinary Science in India; Archiv für Wissenschaftliche und Praktische Thierheilkunde; Revue Vétérinaire; Journal de Médecine Vétérinaire; Der Hufschmied; Annales de Médecine Vétérinaire; Lancet; British Medical Journal; Revue Vétérinaire; Mark Lane Express; Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; American Live Stock Journal; Edinburgh Medical Journal; Live Stock Journal; London Medical Record.*

NEWSPAPERS: *Pioneer Mail* (Indian); *Midland Evening News; Californian Breeder and Sportsman; Madras Mail; Wakefield Herald; Hamilton Advertiser; Leeds Mercury.*